

Access DB# 164845

# SEARCH REQUEST FORM

Scientific and Technical Information Center

Requester's Full Name: George Goudreau Examiner #: 69631 Date: 8-26-05  
Art Unit: 1763 Phone Number: 272-1434 Serial Number: 10-807,139  
Mail Box and Bldg/Room Location: Ren 7A21 Results Format Preferred: (circle) PAPER DISK E-MAIL

If more than one search is submitted, please prioritize searches in order of need.

\*\*\*\*\*

Please provide a detailed statement of the search topic, and describe as specifically as possible the subject matter to be searched. Include the elected species or structures, keywords, synonyms, acronyms, and registry numbers, and combine with the concept or utility of the invention. Define any terms that may have a special meaning. Give examples or relevant citations, authors, etc, if known. Please attach a copy of the cover sheet, pertinent claims, and abstract.

Title of Invention: \_\_\_\_\_

Inventors (please provide full names): \_\_\_\_\_

Earliest Priority Filing Date: \_\_\_\_\_

*\*For Sequence Searches Only\* Please include all pertinent information (parent, child, divisional, or issued patent numbers) along with the appropriate serial number.*

SCIENTIFIC REFERENCE BR  
Sci & Tech Inf. Cntr

AUG 26 2005

Pat. & T.M. Office

\*\*\*\*\*

## STAFF USE ONLY

Searcher: <u>A. Fullin</u>	Type of Search	Vendors and cost where applicable
Searcher Phone #: _____	NA Sequence (#) _____	STN <input checked="" type="checkbox"/> _____
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Date Searcher Picked Up: _____	Structure (#) _____	Questel/Orbit _____
Date Completed: <u>9/15/05</u>	Bibliographic <input checked="" type="checkbox"/> _____	Dr. Link _____
Searcher Prep & Review Time: <u>40</u>	Litigation _____	Lexis/Nexis _____
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Online Time: <u>74</u>	Patent Family _____	WWW/Internet _____
	Other _____	Other (specify) _____



# ***STIC Search Report***

***EIC 1700***

**STIC Database Tracking Number: 164045**

**TO: George A Goudreau**

**Location: 7A21**

**Art Unit : 1763**

**September 16, 2005**

**Case Serial Number: 10/807139**

**From: Kathleen Fuller**

**Location: EIC 1700**

**REMSEN 4B28**

**Phone: 571/272-2505**

**Kathleen.Fuller@uspto.gov**

## **Search Notes**



# STIC Search Results Feedback Form

**EIC17000**

Questions about the scope or the results of the search? Contact *the EIC searcher* or contact:

Kathleen Fuller, EIC 1700 Team Leader  
571/272-2505 REMSEN 4B28

## Voluntary Results Feedback Form

- I am an examiner in Workgroup:  Example: 1713
- Relevant prior art **found**, search results used as follows:

- ☐ 102 rejection
- ☐ 103 rejection
- ☐ Cited as being of interest.
- ☐ Helped examiner better understand the invention.
- ☐ Helped examiner better understand the state of the art in their technology.

Types of relevant prior art found:

- ☐ Foreign Patent(s)
- ☐ Non-Patent Literature  
(journal articles, conference proceedings, new product announcements etc.)

➤ Relevant prior art **not found**:

- ☐ Results verified the lack of relevant prior art (helped determine patentability).
- ☐ Results were not useful in determining patentability or understanding the invention.

Comments:

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FILE COVERS 1907 - 15 Sep 2005 VOL 143 ISS 12

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=> D QUE L33

L2 10 SEA FILE=REGISTRY ABB=ON (106392-12-5/BI OR 12033-89-5/BI OR 121-44-8/BI OR 1310-58-3/BI OR 1336-21-6/BI OR 691397-13-4/BI OR 7440-21-3/BI OR 75-50-3/BI OR 75-59-2/BI OR 7631-86-9/BI)

L3 1 SEA FILE=REGISTRY ABB=ON SILICA/CN

L4 2 SEA FILE=REGISTRY ABB=ON L2 AND PMS/CI

L6 709369 SEA FILE=HCAPLUS ABB=ON L3 OR SILICA OR SIO2 OR SILICON ?OXIDE

L11 2454 SEA FILE=HCAPLUS ABB=ON L6 AND NONION?(2A)SURFACT?

L12 44 SEA FILE=HCAPLUS ABB=ON L11 AND (CMP OR CHEM?(1A)MECH?(1A)POLI SH?)

L13 21 SEA FILE=HCAPLUS ABB=ON L12 AND SLURR?

L15 65429 SEA FILE=HCAPLUS ABB=ON L4 OR ((PROPYLENE OXIDE OR PO) AND (EO OR ETHYLENE OXIDE)) OR NONION?(2A)SURFACT?

L16 375 SEA FILE=HCAPLUS ABB=ON L15 AND ABRASIV?

L17 54 SEA FILE=HCAPLUS ABB=ON L16 AND SLURR?

L18 24 SEA FILE=HCAPLUS ABB=ON L17 AND (CMP OR CHEM?(1A)MECH?(1A)POLI SH?)

L19 25030 SEA FILE=HCAPLUS ABB=ON L4 OR ((PROPYLENE OXIDE OR PO) AND (EO OR ETHYLENE OXIDE))

L20 1607 SEA FILE=HCAPLUS ABB=ON L6 AND L19

L21 14 SEA FILE=HCAPLUS ABB=ON L20 AND (CMP OR CHEM?(1A)MECH?(1A)POLI SH?)

L22 39 SEA FILE=HCAPLUS ABB=ON L20 AND SLURR?

L23 7 SEA FILE=HCAPLUS ABB=ON L22 AND POLISH?

L24 45 SEA FILE=HCAPLUS ABB=ON L13 OR L18 OR L21 OR L23

L25 4 SEA FILE=REGISTRY ABB=ON L2 AND 1-2/N

L26 49123 SEA FILE=HCAPLUS ABB=ON L25

L27 193 SEA FILE=HCAPLUS ABB=ON (L20 OR L16) AND (L26 OR AMINE#/IT OR (2ND OR SECOND OR TWO) (2A)SURFACT?)

L28 15 SEA FILE=HCAPLUS ABB=ON L27 AND SLURR?

L29 9 SEA FILE=HCAPLUS ABB=ON L28 AND (CMP OR POLISH?)

L30 49 SEA FILE=HCAPLUS ABB=ON L24 OR L29

L31 49 SEA FILE=HCAPLUS ABB=ON L30 AND (POLISH? OR CMP)

L32 15 SEA FILE=HCAPLUS ABB=ON L31 AND (COMPOSITION? OR COMPNS)

L33        21 SEA FILE=HCAPLUS ABB=ON L29 OR L32

=> FILE WPIX

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=> D QUE L34

L2            10 SEA FILE=REGISTRY ABB=ON (106392-12-5/BI OR 12033-89-5/BI OR  
                 121-44-8/BI OR 1310-58-3/BI OR 1336-21-6/BI OR 691397-13-4/BI  
                 OR 7440-21-3/BI OR 75-50-3/BI OR 75-59-2/BI OR 7631-86-9/BI)  
L3            1 SEA FILE=REGISTRY ABB=ON SILICA/CN  
L4            2 SEA FILE=REGISTRY ABB=ON L2 AND PMS/CI  
L6            709369 SEA FILE=HCAPLUS ABB=ON L3 OR SILICA OR SIO2 OR SILICON  
                 ?OXIDE  
L11           2454 SEA FILE=HCAPLUS ABB=ON L6 AND NONION? (2A) SURFACT?  
L12           44 SEA FILE=HCAPLUS ABB=ON L11 AND (CMP OR CHEM? (1A) MECH? (1A) POLI  
                 SH?)  
L13           21 SEA FILE=HCAPLUS ABB=ON L12 AND SLURR?  
L15           65429 SEA FILE=HCAPLUS ABB=ON L4 OR ((PROPYLENE OXIDE OR PO) AND  
                 (EO OR ETHYLENE OXIDE)) OR NONION? (2A) SURFACT?  
L16           375 SEA FILE=HCAPLUS ABB=ON L15 AND ABRASIV?  
L17           54 SEA FILE=HCAPLUS ABB=ON L16 AND SLURR?  
L18           24 SEA FILE=HCAPLUS ABB=ON L17 AND (CMP OR CHEM? (1A) MECH? (1A) POLI  
                 SH?)  
L19           25030 SEA FILE=HCAPLUS ABB=ON L4 OR ((PROPYLENE OXIDE OR PO) AND  
                 (EO OR ETHYLENE OXIDE))  
L20           1607 SEA FILE=HCAPLUS ABB=ON L6 AND L19  
L21           14 SEA FILE=HCAPLUS ABB=ON L20 AND (CMP OR CHEM? (1A) MECH? (1A) POLI  
                 SH?)  
L22           39 SEA FILE=HCAPLUS ABB=ON L20 AND SLURR?  
L23           7 SEA FILE=HCAPLUS ABB=ON L22 AND POLISH?  
L24           45 SEA FILE=HCAPLUS ABB=ON L13 OR L18 OR L21 OR L23  
L25           4 SEA FILE=REGISTRY ABB=ON L2 AND 1-2/N  
L26           49123 SEA FILE=HCAPLUS ABB=ON L25

L27 193 SEA FILE=HCAPLUS ABB=ON (L20 OR L16) AND (L26 OR AMINE#/IT OR  
(2ND OR SECOND OR TWO) (2A) SURFACT?)  
L28 15 SEA FILE=HCAPLUS ABB=ON L27 AND SLURR?  
L29 9 SEA FILE=HCAPLUS ABB=ON L28 AND (CMP OR POLISH?)  
L30 49 SEA FILE=HCAPLUS ABB=ON L24 OR L29  
L31 49 SEA FILE=HCAPLUS ABB=ON L30 AND (POLISH? OR CMP)  
L32 15 SEA FILE=HCAPLUS ABB=ON L31 AND (COMPOSITION? OR COMPNS)  
L34 14 SEA FILE=WPIX ABB=ON L29 OR L32

=> FILE COMPENDEX

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<<< SOME LITTLE CHANGES IN TEXT OF CLASSIFICATION AS OF JUNE 13, 2005  
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=> D QUE L35

L2 10 SEA FILE=REGISTRY ABB=ON (106392-12-5/BI OR 12033-89-5/BI OR  
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OR 7440-21-3/BI OR 75-50-3/BI OR 75-59-2/BI OR 7631-86-9/BI)  
L3 1 SEA FILE=REGISTRY ABB=ON SILICA/CN  
L4 2 SEA FILE=REGISTRY ABB=ON L2 AND PMS/CI  
L6 709369 SEA FILE=HCAPLUS ABB=ON L3 OR SILICA OR SIO2 OR SILICON  
?OXIDE  
L11 2454 SEA FILE=HCAPLUS ABB=ON L6 AND NONION? (2A) SURFACT?  
L12 44 SEA FILE=HCAPLUS ABB=ON L11 AND (CMP OR CHEM? (1A) MECH? (1A) POLI  
SH?)  
L13 21 SEA FILE=HCAPLUS ABB=ON L12 AND SLURR?  
L15 65429 SEA FILE=HCAPLUS ABB=ON L4 OR ((PROPYLENE OXIDE OR PO) AND  
(EO OR ETHYLENE OXIDE)) OR NONION? (2A) SURFACT?  
L16 375 SEA FILE=HCAPLUS ABB=ON L15 AND ABRASIV?  
L17 54 SEA FILE=HCAPLUS ABB=ON L16 AND SLURR?  
L18 24 SEA FILE=HCAPLUS ABB=ON L17 AND (CMP OR CHEM? (1A) MECH? (1A) POLI  
SH?)  
L19 25030 SEA FILE=HCAPLUS ABB=ON L4 OR ((PROPYLENE OXIDE OR PO) AND  
(EO OR ETHYLENE OXIDE))  
L20 1607 SEA FILE=HCAPLUS ABB=ON L6 AND L19  
L21 14 SEA FILE=HCAPLUS ABB=ON L20 AND (CMP OR CHEM? (1A) MECH? (1A) POLI  
SH?)  
L22 39 SEA FILE=HCAPLUS ABB=ON L20 AND SLURR?  
L23 7 SEA FILE=HCAPLUS ABB=ON L22 AND POLISH?  
L24 45 SEA FILE=HCAPLUS ABB=ON L13 OR L18 OR L21 OR L23  
L25 4 SEA FILE=REGISTRY ABB=ON L2 AND 1-2/N  
L26 49123 SEA FILE=HCAPLUS ABB=ON L25  
L27 193 SEA FILE=HCAPLUS ABB=ON (L20 OR L16) AND (L26 OR AMINE#/IT OR  
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L28 15 SEA FILE=HCAPLUS ABB=ON L27 AND SLURR?  
L29 9 SEA FILE=HCAPLUS ABB=ON L28 AND (CMP OR POLISH?)  
L30 49 SEA FILE=HCAPLUS ABB=ON L24 OR L29  
L31 49 SEA FILE=HCAPLUS ABB=ON L30 AND (POLISH? OR CMP)  
L32 15 SEA FILE=HCAPLUS ABB=ON L31 AND (COMPOSITION? OR COMPNS)

L35        1 SEA FILE=COMPENDEX ABB=ON L29 OR L32

=> FILE JICST

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L2            10 SEA FILE=REGISTRY ABB=ON (106392-12-5/BI OR 12033-89-5/BI OR  
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                 OR 7440-21-3/BI OR 75-50-3/BI OR 75-59-2/BI OR 7631-86-9/BI)  
L3            1 SEA FILE=REGISTRY ABB=ON SILICA/CN  
L4            2 SEA FILE=REGISTRY ABB=ON L2 AND PMS/CI  
L6            709369 SEA FILE=HCAPLUS ABB=ON L3 OR SILICA OR SIO2 OR SILICON  
                 ?OXIDE  
L11           2454 SEA FILE=HCAPLUS ABB=ON L6 AND NONION?(2A)SURFACT?  
L12           44 SEA FILE=HCAPLUS ABB=ON L11 AND (CMP OR CHEM?(1A)MECH?(1A)POLI  
                 SH?)  
L13           21 SEA FILE=HCAPLUS ABB=ON L12 AND SLURR?  
L15           65429 SEA FILE=HCAPLUS ABB=ON L4 OR ((PROPYLENE OXIDE OR PO) AND  
                 (EO OR ETHYLENE OXIDE)) OR NONION?(2A)SURFACT?  
L16           375 SEA FILE=HCAPLUS ABB=ON L15 AND ABRASIV?  
L17           54 SEA FILE=HCAPLUS ABB=ON L16 AND SLURR?  
L18           24 SEA FILE=HCAPLUS ABB=ON L17 AND (CMP OR CHEM?(1A)MECH?(1A)POLI  
                 SH?)  
L19           25030 SEA FILE=HCAPLUS ABB=ON L4 OR ((PROPYLENE OXIDE OR PO) AND  
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L20           1607 SEA FILE=HCAPLUS ABB=ON L6 AND L19  
L21           14 SEA FILE=HCAPLUS ABB=ON L20 AND (CMP OR CHEM?(1A)MECH?(1A)POLI  
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L25           4 SEA FILE=REGISTRY ABB=ON L2 AND 1-2/N  
L26           49123 SEA FILE=HCAPLUS ABB=ON L25  
L27           193 SEA FILE=HCAPLUS ABB=ON (L20 OR L16) AND (L26 OR AMINE#/IT OR  
                 (2ND OR SECOND OR TWO) (2A)SURFACT?)  
L28           15 SEA FILE=HCAPLUS ABB=ON L27 AND SLURR?  
L29           9 SEA FILE=HCAPLUS ABB=ON L28 AND (CMP OR POLISH?)  
L30           49 SEA FILE=HCAPLUS ABB=ON L24 OR L29  
L31           49 SEA FILE=HCAPLUS ABB=ON L30 AND (POLISH? OR CMP)  
L32           15 SEA FILE=HCAPLUS ABB=ON L31 AND (COMPOSITION? OR COMPNS)  
L36           0 SEA FILE=JICST-EPLUS ABB=ON L29 OR L32

=> FILE INSPEC

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=> D QUE L37

L2 10 SEA FILE=REGISTRY ABB=ON (106392-12-5/BI OR 12033-89-5/BI OR  
121-44-8/BI OR 1310-58-3/BI OR 1336-21-6/BI OR 691397-13-4/BI  
OR 7440-21-3/BI OR 75-50-3/BI OR 75-59-2/BI OR 7631-86-9/BI)  
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L4 2 SEA FILE=REGISTRY ABB=ON L2 AND PMS/CI  
L6 709369 SEA FILE=HCAPLUS ABB=ON L3 OR SILICA OR SIO2 OR SILICON  
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L11 2454 SEA FILE=HCAPLUS ABB=ON L6 AND NONION? (2A) SURFACT?  
L12 44 SEA FILE=HCAPLUS ABB=ON L11 AND (CMP OR CHEM? (1A) MECH? (1A) POLI  
SH?)  
L13 21 SEA FILE=HCAPLUS ABB=ON L12 AND SLURR?  
L15 65429 SEA FILE=HCAPLUS ABB=ON L4 OR ((PROPYLENE OXIDE OR PO) AND  
(EO OR ETHYLENE OXIDE)) OR NONION? (2A) SURFACT?  
L16 375 SEA FILE=HCAPLUS ABB=ON L15 AND ABRASIV?  
L17 54 SEA FILE=HCAPLUS ABB=ON L16 AND SLURR?  
L18 24 SEA FILE=HCAPLUS ABB=ON L17 AND (CMP OR CHEM? (1A) MECH? (1A) POLI  
SH?)  
L19 25030 SEA FILE=HCAPLUS ABB=ON L4 OR ((PROPYLENE OXIDE OR PO) AND  
(EO OR ETHYLENE OXIDE))  
L20 1607 SEA FILE=HCAPLUS ABB=ON L6 AND L19  
L21 14 SEA FILE=HCAPLUS ABB=ON L20 AND (CMP OR CHEM? (1A) MECH? (1A) POLI  
SH?)  
L22 39 SEA FILE=HCAPLUS ABB=ON L20 AND SLURR?  
L23 7 SEA FILE=HCAPLUS ABB=ON L22 AND POLISH?  
L24 45 SEA FILE=HCAPLUS ABB=ON L13 OR L18 OR L21 OR L23  
L25 4 SEA FILE=REGISTRY ABB=ON L2 AND 1-2/N  
L26 49123 SEA FILE=HCAPLUS ABB=ON L25  
L27 193 SEA FILE=HCAPLUS ABB=ON (L20 OR L16) AND (L26 OR AMINE#/IT OR  
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L28 15 SEA FILE=HCAPLUS ABB=ON L27 AND SLURR?  
L29 9 SEA FILE=HCAPLUS ABB=ON L28 AND (CMP OR POLISH?)  
L30 49 SEA FILE=HCAPLUS ABB=ON L24 OR L29  
L31 49 SEA FILE=HCAPLUS ABB=ON L30 AND (POLISH? OR CMP)  
L32 15 SEA FILE=HCAPLUS ABB=ON L31 AND (COMPOSITION? OR COMPNS)  
L37 1 SEA FILE=INSPEC ABB=ON L29 OR L32

=> DUP REM L33 L34 L35 L37

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PROCESSING COMPLETED FOR L34  
PROCESSING COMPLETED FOR L35  
PROCESSING COMPLETED FOR L37



L39 34 DUP REM L33 L34 L35 L37 (3 DUPLICATES REMOVED)

=&gt;

=&gt; D L39 ALL 1-34 HITSTR

L39 ANSWER 1 OF 34 HCAPLUS COPYRIGHT 2005 ACS on STN DUPLICATE 1

AN 2005:527317 HCAPLUS

DN 143:69836

ED Entered STN: 19 Jun 2005

TI **Slurry compositions and CMP methods using**  
the same

IN Choi, Jaekwang; Lee, Jaedong; Hong, Chang-Ki

PA S. Korea

SO U.S. Pat. Appl. Publ., 17 pp.

CODEN: USXXCO

DT Patent

LA English

IC ICM H01L021-76

ICS H01L021-302; H01L021-461

INCL 438690000

CC 76-3 (Electric Phenomena)

Section cross-reference(s): 48, 66

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 2005130428	A1	20050616	US 2004-807139	20040324
	JP 2005175498	A2	20050630	<del>JP 2004-359039</del>	20041210
PRAI	KR 2003-90551	A	20031212		
	US 2004-807139	A	20040324		

CLASS

PATENT NO.	CLASS	PATENT FAMILY CLASSIFICATION CODES
US 2005130428	ICM	H01L021-76
	ICS	H01L021-302; H01L021-461
	INCL	438690000
US 2005130428	NCL	438/690.000
JP 2005175498	FTERM	3C058/AA07; 3C058/CB01; 3C058/CB10; 3C058/DA02; 3C058/DA12; 3C058/DA17

AB The exemplary embodiments of the present invention providing new **slurry compns.** suitable for use in processes involving the **chemical mech. polishing (CMP)** of a polysilicon layer. The **slurry compns.** include one or more **nonionic polymeric surfactants** that will selectively form a passivation layer on an exposed polysilicon surface to suppress the polysilicon removal rate relative to Si oxide and Si nitride and improve the planarity of the **polished** substrate. Exemplary surfactants include alkyl and aryl alcs. of **ethylene oxide (EO)** and **propylene oxide (PO)** block copolymers and may be present in the **slurry compns.** in an amount of up to .apprx.5%, although much smaller concns. may be effective. Other **slurry** additives may include viscosity modifiers, pH modifiers, dispersion agents, chelating agents, and amine or imine surfactants suitable for modifying the relative removal rates of Si nitride and Si oxide.

ST surfactant block copolymer **CMP** polysilicon semiconductor device fabrication

IT Polymers, uses

RL: TEM (Technical or engineered material use); USES (Uses)  
(block; **slurry compns.** and **CMP** methods to

*applicant*

suppress polysilicon removal)

IT **Polishing**  
(chemical-mech.; slurry compns.  
and CMP methods to suppress polysilicon removal)

IT **pH**  
(modifiers; slurry compns. and CMP  
methods to suppress polysilicon removal)

IT **Surfactants**  
(nonionic; slurry compns. and CMP  
methods to suppress polysilicon removal)

IT **Abrasives**  
Chelating agents  
Dispersing agents  
Passivation  
Semiconductor device fabrication  
**Slurries**  
Viscosity  
(slurry compns. and CMP methods to  
suppress polysilicon removal)

IT **Amines, uses**  
Imines  
RL: TEM (Technical or engineered material use); USES (Uses)  
(slurry compns. and CMP methods to  
suppress polysilicon removal)

IT 7440-21-3, Polysilicon, processes 7631-86-9, Silica,  
processes 12033-89-5, Silicon nitride, processes  
RL: PEP (Physical, engineering or chemical process); PYP (Physical  
process); TEM (Technical or engineered material use); PROC (Process); USES  
(Uses)  
(slurry compns. and CMP methods to  
suppress polysilicon removal)

IT 75-50-3, Trimethylamine, uses 75-59-2,  
Tetramethylammonium hydroxide 121-44-8, Triethylamine, uses  
1310-58-3, Potassium hydroxide (K(OH)), uses 1336-21-6, Ammonium  
hydroxide 106392-12-5, Ethylene oxide-  
propylene oxide block copolymer 106392-12-5D,  
Ethylene oxide-propylene oxide block  
copolymer, monononylphenyl and mono-octylphenyl ethers 691397-13-4  
, Ethylene oxide-propylene oxide  
triblock copolymer  
RL: TEM (Technical or engineered material use); USES (Uses)  
(slurry compns. and CMP methods to  
suppress polysilicon removal)

IT 7631-86-9, Silica, processes  
RL: PEP (Physical, engineering or chemical process); PYP (Physical  
process); TEM (Technical or engineered material use); PROC (Process); USES  
(Uses)  
(slurry compns. and CMP methods to  
suppress polysilicon removal)

RN 7631-86-9 HCAPLUS

CN Silica (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)

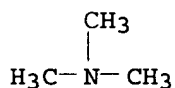
O=Si=O

IT 75-50-3, Trimethylamine, uses 75-59-2,  
Tetramethylammonium hydroxide 121-44-8, Triethylamine, uses  
1336-21-6, Ammonium hydroxide 106392-12-5,  
Ethylene oxide-propylene oxide block

copolymer 106392-12-5D, Ethylene oxide-propylene oxide block copolymer, monononylphenyl and monooctylphenyl ethers 691397-13-4, Ethylene oxide-propylene oxide triblock copolymer  
RL: TEM (Technical or engineered material use); USES (Uses)  
(slurry compns. and CMP methods to suppress polysilicon removal)

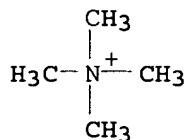
RN 75-50-3 HCAPLUS

CN Methanamine, N,N-dimethyl- (9CI) (CA INDEX NAME)



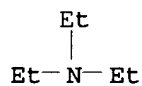
RN 75-59-2 HCAPLUS

CN Methanaminium, N,N,N-trimethyl-, hydroxide (9CI) (CA INDEX NAME)



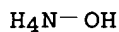
RN 121-44-8 HCAPLUS

CN Ethanamine, N,N-diethyl- (9CI) (CA INDEX NAME)



RN 1336-21-6 HCAPLUS

CN Ammonium hydroxide ((NH4)(OH)) (9CI) (CA INDEX NAME)



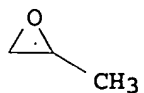
RN 106392-12-5 HCAPLUS

CN Oxirane, methyl-, polymer with oxirane, block (9CI) (CA INDEX NAME)

CM 1

CRN 75-56-9

CMF C3 H6 O



CM 2

CRN 75-21-8

CMF C2 H4 O



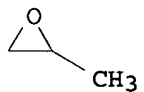
RN 106392-12-5 HCAPLUS

CN Oxirane, methyl-, polymer with oxirane, block (9CI) (CA INDEX NAME)

CM 1

CRN 75-56-9

CMF C3 H6 O



CM 2

CRN 75-21-8

CMF C2 H4 O



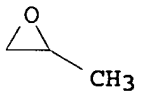
RN 691397-13-4 HCAPLUS

CN Oxirane, methyl-, polymer with oxirane, triblock (9CI) (CA INDEX NAME)

CM 1

CRN 75-56-9

CMF C3 H6 O



CM 2

CRN 75-21-8

CMF C2 H4 O



L39 ANSWER 2 OF 34 HCAPLUS COPYRIGHT 2005 ACS on STN

AN 2005:823155 HCAPLUS

ED Entered STN: 19 Aug 2005

TI Synergistic antibacterial formulation containing cefixime trihydrate, cloxacillin sodium and Lactobacillus sporogenes spores

IN Khandelwal, Sanjeev

PA India

SO U.S. Pat. Appl. Publ., 25 pp.

CODEN: USXXCO

DT Patent

LA English

IC ICM A61K031-545

ICS A61K031-47; A61K031-43; A61K031-716

INCL 424470000; 514192000; 514057000; 514200000

CC 63-6 (Pharmaceuticals)

Section cross-reference(s): 1

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 2005181051	A1	20050818	US 2004-13110	20041215
	EP 1566176	A1	20050824	EP 2005-250879	20050216
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, HU, PL, SK, BA, HR, IS, YU				
PRAI	IN 2004-MU178	A	20040216		
	IN 2004-MU258	A	20040303		

CLASS

PATENT NO.	CLASS	PATENT FAMILY CLASSIFICATION CODES
US 20050181051	ICM	A61K031-545
	ICS	A61K031-47; A61K031-43; A61K031-716
	INCL	424470000; 514192000; 514057000; 514200000
US 2005181051	NCL	424/470.000; 514/192.000; 514/057.000; 514/200.000

AB A synergistic antibacterial formulation for oral delivery of cefixime trihydrate, cloxacillin sodium in an extended release form and an immediate release form, and Lactobacillus sporogenes spores is provided. For example, sustained-release granules were prepared by wet granulation of cloxacillin sodium 50.0 kg and hydroxypropyl Me cellulose (HPMC; average viscosity 4000 cps) 6.0 kg, using a binder comprising HPMC (average viscosity 50 cps) 800g dissolved in a mixture of dichloromethane 8.0 kg and iso-Pr alc. 12.0 kg. The core was prepared by blending cloxacillin sodium sustained-release granules obtained with a mixture of cloxacillin sodium particle 7.6 kg, cefixime trihydrate particles 11.2 kg, L. sporogenes spores 750 g, sodium starch glycollate 1.0 kg, colloidal silicon dioxide 0.3 kg, sodium lauryl sulfate 1.0 kg and talc 1.0 kg was prepared. Magnesium stearate 1.0 kg was added and further blended, resulting in the lubricated core mass. This core mass was then compressed into cores of average weight of 806.2 mg  $\pm$  3%. The core obtained were pan coated with a film coating composition containing Et cellulose 0.8 kg, hydroxypropyl cellulose 0.8 kg, iso-Pr alc. 12 kg, methylene chloride 22 kg, di-Et phthalate 0.01 kg and titanium dioxide 0.15 kg in a stainless steel container and stirred for five minutes using overhead stirrer until

a smooth slurry was obtained. The coated tablets were polished with talc. The film-coated tablet (average weight 820 mg <plus/minus>3%) contained (i) cloxacillin sodium equivalent to 250 mg cloxacillin sustained release, (ii) cloxacillin sodium equivalent to 250 mg cloxacillin immediate release, (III) cefixime trihydrate equivalent to 100 mg cefixime immediate release, and (IV) L. sporogenes 45 million spores.

ST cloxacillin cefixime Lactobacillus coated tablet synergistic antibacterial

IT Fatty acids  
RL: THU (Therapeutic use); BIOL (Biological study); USES (Uses)  
(C6-30; synergistic antibacterial formulation containing cefixime trihydrate, cloxacillin sodium and Lactobacillus sporogenes spores)

IT Alcohols  
RL: THU (Therapeutic use); BIOL (Biological study); USES (Uses)  
(C16-18, ethoxylated; synergistic antibacterial formulation containing cefixime trihydrate, cloxacillin sodium and Lactobacillus sporogenes spores)

IT Alcohols  
Glycerides  
RL: THU (Therapeutic use); BIOL (Biological study); USES (Uses)  
(C16-18; synergistic antibacterial formulation containing cefixime trihydrate, cloxacillin sodium and Lactobacillus sporogenes spores)

IT Gums and Mucilages  
(Panwar gum, larch arabolactan; synergistic antibacterial formulation containing cefixime trihydrate, cloxacillin sodium and Lactobacillus sporogenes spores)

IT Drug delivery systems  
(controlled-release; synergistic antibacterial formulation containing cefixime trihydrate, cloxacillin sodium and Lactobacillus sporogenes spores)

IT Monoglycerides  
RL: THU (Therapeutic use); BIOL (Biological study); USES (Uses)  
(diacetylated; synergistic antibacterial formulation containing cefixime trihydrate, cloxacillin sodium and Lactobacillus sporogenes spores)

IT Alcohols  
RL: THU (Therapeutic use); BIOL (Biological study); USES (Uses)  
(fatty, C6-30; synergistic antibacterial formulation containing cefixime trihydrate, cloxacillin sodium and Lactobacillus sporogenes spores)

IT Lipids  
RL: THU (Therapeutic use); BIOL (Biological study); USES (Uses)  
(glycerolipids; synergistic antibacterial formulation containing cefixime trihydrate, cloxacillin sodium and Lactobacillus sporogenes spores)

IT Citrus  
(pulp; synergistic antibacterial formulation containing cefixime trihydrate, cloxacillin sodium and Lactobacillus sporogenes spores)

IT Aerogels  
(silica; synergistic antibacterial formulation containing cefixime trihydrate, cloxacillin sodium and Lactobacillus sporogenes spores)

IT Waxes  
RL: THU (Therapeutic use); BIOL (Biological study); USES (Uses)  
(spermaceti; synergistic antibacterial formulation containing cefixime trihydrate, cloxacillin sodium and Lactobacillus sporogenes spores)

IT Acacia  
Antibacterial agents  
Antibiotics  
Bacillus coagulans  
Beeswax  
Cation exchangers  
Chondrus crispus  
Combination chemotherapy

Human  
 Molasses  
 Porifera  
 Surfactants  
     (synergistic antibacterial formulation containing cefixime trihydrate,  
     cloxacillin sodium and Lactobacillus sporogenes spores)

IT Alcohols  
 Carnauba wax  
 Ceramides  
 Cottonseed oil  
 Flavonoids  
 Gelatins  
 Glycerides  
 Polyamides  
 Polyoxyalkylenes  
 Polysiloxanes  
 Rosin  
     Silica gel  
 Smectite-group minerals  
 Soybean oil  
 Sphingolipids  
 Sphingosines  
 Waxes  
 RL: THU (Therapeutic use); BIOL (Biological study); USES (Uses)  
     (synergistic antibacterial formulation containing cefixime trihydrate,  
     cloxacillin sodium and Lactobacillus sporogenes spores)

IT Drug interactions  
     (synergistic; synergistic antibacterial formulation containing cefixime  
     trihydrate, cloxacillin sodium and Lactobacillus sporogenes spores)

IT Drug delivery systems  
     (tablets, coated; synergistic antibacterial formulation containing cefixime  
     trihydrate, cloxacillin sodium and Lactobacillus sporogenes spores)

IT 9003-39-8D, crosslinked  
 RL: THU (Therapeutic use); BIOL (Biological study); USES (Uses)  
     (Crospovidone; synergistic antibacterial formulation containing cefixime  
     trihydrate, cloxacillin sodium and Lactobacillus sporogenes spores)

IT 7631-86-9, Colloidal silicon dioxide  
 RL: THU (Therapeutic use); BIOL (Biological study); USES (Uses)  
     (colloidal; synergistic antibacterial formulation containing cefixime  
     trihydrate, cloxacillin sodium and Lactobacillus sporogenes spores)

IT 642-78-4, Cloxacillin Sodium 125110-14-7, Cefixime Trihydrate  
 RL: ADV (Adverse effect, including toxicity); PAC (Pharmacological  
 activity); PKT (Pharmacokinetics); THU (Therapeutic use); BIOL (Biological  
 study); USES (Uses)  
     (synergistic antibacterial formulation containing cefixime trihydrate,  
     cloxacillin sodium and Lactobacillus sporogenes spores)

IT 9004-65-3, Hydroxypropyl methylcellulose  
 RL: PRP (Properties); THU (Therapeutic use); BIOL (Biological study); USES  
 (Uses)  
     (synergistic antibacterial formulation containing cefixime trihydrate,  
     cloxacillin sodium and Lactobacillus sporogenes spores)

IT 50-70-4D, Sorbitol, derivs. 50-99-7, Glucose 56-81-5D, Glycerol,  
 derivs. 57-10-3, Palmitic Acid 57-11-4, Stearic acid 57-50-1,  
 Sucrose 57-50-1D, Sucrose, esters 57-88-5, Cholesterol 63-42-3,  
 Lactose 67-68-5, Dimethyl sulfoxide 69-65-8D, Mannitol, derivs.  
 71-41-0, Pentanol 106-11-6, Diethylene glycol monostearate 107-21-1D,  
 1,2-Ethandiol, derivs. 110-54-3, Hexane 111-03-5, Glyceryl monooleate  
 111-27-3, Hexanol 111-60-4, Ethylene glycol monostearate 112-92-5,  
 Stearyl Alcohol 117-39-5, Quercetin 151-21-3, Sodium lauryl sulfate  
 446-72-0, Genistein 480-40-0, Chrysin 480-44-4, Acacetin 520-27-4,

Diosmin 538-24-9D, Glyceryl trilaurate, glyceryl ester 546-93-0, Magnesium carbonate 555-45-3D, Glyceryl trimyristate, glyceryl ester 557-04-0, Magnesium stearate 557-05-1, Zinc stearate 1309-48-4, Magnesium oxide 1323-39-3, Propylene glycol monostearate 1338-39-2, Sorbitan monolaurate 1338-41-6, Sorbitan monostearate 1338-43-8, Sorbitan monooleate 1344-95-2, Calcium silicate 1592-23-0, Calcium stearate 3097-08-3, Magnesium lauryl sulfate 7757-93-9, Dibasic calcium phosphate 7758-87-4, Tribasic calcium phosphate 8007-43-0, Sorbitan sesquioleate 9000-01-5, Gum arabic 9000-28-6, Ghatti gum 9000-30-0, Guar gum 9002-18-0, Agar 9002-89-5, Polyvinyl alcohol 9002-92-0, Lauromacrogol 9003-20-7, Polyvinyl acetate 9003-39-8, Polyvinylpyrrolidone 9004-32-4, Carboxymethylcellulose sodium 9004-34-6, Cellulose 9004-38-0, Cellulose acetate phthalate 9004-53-9, Dextrin 9004-57-3, Ethylcellulose 9004-64-2, Hydroxypropylcellulose 9004-67-5, Methylcellulose 9004-99-3, PEG Stearate 9005-25-8, Starch 9005-38-3, Sodium alginate 9005-64-5, polysorbate 20 9005-65-6, polysorbate 80 9005-66-7, polysorbate 40 9005-67-8, polysorbate 60 9005-70-3, polysorbate 85 9005-71-4, polysorbate 65 9011-14-7, Polymethyl methacrylate 9036-19-5 9036-66-2, Arabinogalactan 9050-04-8 9057-02-7, Pullulan 9057-06-1, Carboxymethyl starch 9063-38-1, Sodium starch glycolate 10236-47-2, Naringin 11099-07-3D, Glyceryl stearate, glyceryl ester 12619-70-4, Cyclodextrin 14807-96-6, Talc 14987-04-3, Magnesium trisilicate 25087-26-7, Polymethacrylic acid 25301-02-4, Tyloxapol 25322-68-3, Polyethylene glycol 25322-68-3D, Macrogol, ethers and esters 25618-55-7D, Polyglycerol, derivs. 26027-38-3, Nonoxynol 26266-57-9, Sorbitan monopalmitate 26266-58-0, Sorbitan trioleate 26338-57-8, Maleic anhydride-vinyl alcohol copolymer 26658-19-5, Sorbitan tristearate 31566-31-1, Glyceryl monostearate 37353-59-6, Hydroxymethyl cellulose 54182-62-6, Polacrilin 58858-21-2, Hydroxypropyl methylcellulose acetate 69670-80-0, Hydroxymethyl propylcellulose 74811-65-7, Croscarmellose sodium 86157-80-4 106392-12-5, Poloxamer 222414-51-9, Polyethylene glycol hydroxystearate

RL: THU (Therapeutic use); BIOL (Biological study); USES (Uses)  
(synergistic antibacterial formulation containing cefixime trihydrate, cloxacillin sodium and Lactobacillus sporogenes spores)

IT 7631-86-9, Colloidal silicon dioxide

RL: THU (Therapeutic use); BIOL (Biological study); USES (Uses)  
(colloidal; synergistic antibacterial formulation containing cefixime trihydrate, cloxacillin sodium and Lactobacillus sporogenes spores)

RN 7631-86-9 HCAPLUS

CN Silica (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)

O=Si=O

IT 106392-12-5, Poloxamer

RL: THU (Therapeutic use); BIOL (Biological study); USES (Uses)  
(synergistic antibacterial formulation containing cefixime trihydrate, cloxacillin sodium and Lactobacillus sporogenes spores)

RN 106392-12-5 HCAPLUS

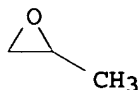
CN Oxirane, methyl-, polymer with oxirane, block (9CI) (CA INDEX NAME)

CM 1

CRN 75-56-9

CMF C3 H6 O





CM 2

CRN 75-21-8

CMF C2 H4 O



L39 ANSWER 3 OF 34 WPIX COPYRIGHT 2005 THE THOMSON CORP on STN  
 AN 2005-416664 [42] WPIX  
 DNN N2005-338024 DNC C2005-127515  
 TI **Slurry** useful for **chemical mechanical polishing** in e.g. manufacturing semiconductor device comprises a copper oxidizing agent; a complexing agent; a surfactant; an inorganic particle; and resin particle containing polystyrene.  
 DC A97 E19 G04 L02 L03 P61 U11  
 IN FUKUSHIMA, D; MINAMIHABA, G; YAMAMOTO, S; YANO, H  
 PA (TOKE) TOSHIBA KK; (FUKU-I) FUKUSHIMA D; (MINA-I) MINAMIHABA G; (YAMA-I) YAMAMOTO S; (YANO-I) YANO H  
 CYC 2  
 PI US 2005118821 A1 20050602 (200542)\* 14 H01L021-302  
 JP 2005159166 A 20050616 (200542) 19 H01L021-304  
 ADT US 2005118821 A1 US 2004-932096 20040902; JP 2005159166 A JP 2003-398163 20031127  
 PRAI JP 2003-398163 20031127  
 IC ICM H01L021-302; H01L021-304  
 ICS B24B037-00; C09K003-14; H01L021-461  
 AB US2005118821 A UPAB: 20050704  
**NOVELTY - A chemical mechanical polishing (CMP) slurry** comprises a copper oxidizing agent; a complexing agent forming a copper organic complex; a surfactant; an inorganic particle; and a resin particle (R1) containing polystyrene. (R1) Has a functional group of same kind of polarity as that of the inorganic particle, an average particle diameter of less than 100 nm, and is incorporated at a concentration of less than 1 weight%.

DETAILED DESCRIPTION - INDEPENDENT CLAIMS are included for the following:

(1) **polishing** of a semiconductor involving contacting a **polishing** surface of the semiconductor substrate with a **polishing** pad attached to a turntable, and dropping the **CMP slurry** on the **polishing** pad to **polish** the **polishing** surface; and

(2) manufacturing a semiconductor device involving forming an insulating film above a semiconductor substrate, forming a recessed portion in the insulating film, depositing a conductive material inside the recessed portion and above the insulating film to form a conductive layer, and removing the conductive material which is deposited above the insulating film by **CMP** using a **CMP slurry** to selectively leave the conductive material in the recessed portion.

USE - For **chemical mechanical polishing (CMP)** of a copper film formed on a surface of a semiconductor

substrate having an over-plating portion, by removing the residual copper in the region of over-plating to form a copper film of uniform thickness, in the manufacture of a semiconductor device.

ADVANTAGE - By using the **CMP slurry composition** the **polishing** can be performed at high **polishing** rate while suppressing the generation of erosion or dishing.

Dwg.0/6

FS CPI EPI GMPI

FA AB; DCN

MC CPI: A04-C02E; A12-A03; E06-D01; E06-D02; E06-D08; E07-D04C; E10-A09B4; E10-B02D6; E10-C02D1; E10-C02D2; E10-E04M3; E31-E01; E31-E03; E31-P03; E34-C02; E35-K02; G04-B04; L02-F; L02-J; L04-C27  
EPI: U11-A10; U11-C06A1A

L39 ANSWER 4 OF 34 WPIX COPYRIGHT 2005 THE THOMSON CORP on STN

AN 2005-402873 [41] WPIX

DNN N2005-326740 DNC C2005-124404

TI Manufacture of semiconductor device, e.g. memory, comprises **chemical mechanical polishing** spin-on glass film on **silicon dioxide** film using **slurry** containing cerium oxide and cationic surfactant.

DC L03 U11

IN MATSUI, Y; MINAMIHABA, G; SHIGETA, A; YANO, H

PA (TOKE) TOSHIBA KK; (MATS-I) MATSUI Y; (MINA-I) MINAMIHABA G; (SHIG-I) SHIGETA A; (YANO-I) YANO H

CYC 3

PI	US 2005106874	A1	20050519	(200541)*	26	H01L021-302
	JP 2005109452	A	20050421	(200541)	21	H01L021-304
	KR 2005027157	A	20050317	(200557)		H01L021-304

ADT US 2005106874 A1 US 2004-935429 20040908; JP 2005109452 A JP 2004-258030 20040906; KR 2005027157 A KR 2004-72936 20040913

PRAI JP 2004-258030 20040906; JP 2003-321474 20030912

IC ICM H01L021-302; H01L021-304

ICS H01L021-461

AB US2005106874 A UPAB: 20050629

NOVELTY - Manufacturing a semiconductor device comprises depositing a **silicon dioxide** film (3) on a substrate (1) having a wiring pattern (2); coating a spin-on glass (SOG) film (4) on the **silicon dioxide** film; and **polishing** the spin-on glass film using **slurry** containing cerium oxide and cationic surfactant with a **chemical-mechanical polishing** process.

DETAILED DESCRIPTION - A further INDEPENDENT CLAIM is included for manufacture of a semiconductor device.

USE - For manufacturing a semiconductor device e.g. memory, high speed logic large scale integrated circuit (LSI), system LSI or memory/logic mixed LSI.

ADVANTAGE - The planarization step executed with the **chemical -mechanical polishing** process that uses the **slurry** containing cerium oxide and cationic surfactant(s) selectively **polishes** SiO<sub>2</sub> film and SOG film with the **polishing** selectivity value of at least 5. The reliability of the semiconductor device can be enhanced through the enhancement of the insulating capability of the semiconductor device.

DESCRIPTION OF DRAWING(S) - The figure shows a section of a semiconductor device during processing.

Substrate 1

Wiring pattern 2

Silicon dioxide film 3

SOG film 4  
Dwg.3B/16  
FS CPI EPI  
FA AB; GI  
MC CPI: L04-B04A; L04-C12; L04-C12D; L04-C27; L04-E15  
EPI: U11-C06A1A; U11-C18B5

L39 ANSWER 5 OF 34 WPIX COPYRIGHT 2005 THE THOMSON CORP on STN  
AN 2005-354123 [36] WPIX  
DNN N2005-289162 DNC C2005-109369  
TI **Slurry** useful for **chemical mechanical polishing** of copper and barrier films comprises at least one **abrasive**, at least one organic phosphonate, at least one oxidizer and water.  
DC A97 E11 L02 L03 U11  
IN JENG, W; TSENG, S; YANG, K  
PA (JENG-I) JENG W; (TSEN-I) TSENG S; (YANG-I) YANG K  
CYC 1  
PI US 2005090104 A1 20050428 (200536)\* 12 H01L021-302  
ADT US 2005090104 A1 Provisional US 2003-514830P 20031027, US 2004-958417 20041006  
PRAI US 2003-514830P 20031027; US 2004-958417 20041006  
IC ICM H01L021-302  
ICS H01L021-461  
AB US2005090104 A UPAB: 20050608  
NOVELTY - A **chemical mechanical polishing slurry** comprises at least one **abrasive**, at least one organic phosphonate, at least one oxidizer and water.  
USE - For **chemical mechanical polishing** of copper and barrier films (claimed).  
ADVANTAGE - The **slurry** is capable of **polishing** copper at high removal rate at a relatively low down force so that **CMP** throughput is improved and **CMP** defects are reduced, has high selectivity to tantalum barrier. The barrier **slurry** delivers good planarity, has high hydrogen peroxide stability so that **slurry** pot lifetime is extended and the performance of **chemical mechanical polishing** process is stable. The **slurry** gives low dishing and erosion so that the interconnect metal lines have uniform sheet resistance and the wafer surface planarity is good for fabrication multi-level interconnects. The **slurry** provides smooth copper surface on the **polished** surface, gives low copper corrosion defects on **polished** wafers, is cost effective. The organic phosphonates are excellent chelating agents for copper. The phosphonates generally have significantly higher solubility in water comparing to many carboxylic and amino acids or salts given in the prior art for copper **chemical mechanical polishing**. The manufacturing process of **slurry** is usually simpler and more cost effective.  
Dwg.0/5  
FS CPI EPI  
FA AB; DCN  
MC CPI: A12-W12B; E05-G02; E05-G03D; E31-C; E31-E01; E31-E03; E31-P03; E34-C02; E34-E; E35-K02; E35-S; E35-U05; L02-F04; L04-B04A; L04-C27  
EPI: U11-A10; U11-C06A1A

L39 ANSWER 6 OF 34 WPIX COPYRIGHT 2005 THE THOMSON CORP on STN  
AN 2005-151610 [16] WPIX  
CR 2005-519376 [53]  
DNN N2005-127934 DNC C2005-048924  
TI **Chemical mechanical polishing slurry**

for removing **silicon dioxide** in preference to silicon nitride useful in manufacture of semiconductor wafer, comprises selectivity enhancer comprising nucleic acid related compound e.g. uridine.

DC A85 B04 D16 P61 U11  
 IN HEGDE, S; XU, W; XU, W P  
 PA (HEGD-I) HEGDE S; (XUWW-I) XU W; (NYAC-N) NYACOL NANO TECHNOLOGIES INC  
 CYC 108  
 PI US 2005028450 A1 20050210 (200516)\* 6 B24D003-02  
 WO 2005014746 A1 20050217 (200516) EN C09G001-02  
 RW: AT BE BG BW CH CY CZ DE DK EA EE ES FI FR GB GH GM GR HU IE IT KE  
 LS LU MC MW MZ NA NL OA PL PT RO SD SE SI SK SL SZ TR TZ UG ZM ZW  
 W: AE AG AL AM AT AU AZ BA BB BG BR BW BY BZ CA CH CN CO CR CU CZ DE  
 DK DM DZ EC EE EG ES FI GB GD GE GH GM HR HU ID IL IN IS JP KE KG  
 KP KR KZ LC LK LR LS LT LU LV MA MD MG MK MN MW MX MZ NA NI NO NZ  
 OM PG PH PL PT RO RU SC SD SE SG SK SL SY TJ TM TN TR TT TZ UA UG  
 US UZ VC VN YU ZA ZM ZW

ADT US 2005028450 A1 US 2003-635949 20030807; WO 2005014746 A1 WO 2004-US25536 20040806

PRAI US 2003-635949 20030807  
 IC ICM B24D003-02; C09G001-02  
 ICS C09K003-14; H01L021-304; H01L021-306

AB US2005028450 A UPAB: 20050818  
 NOVELTY - A **chemical mechanical polishing (CMP)** slurry comprises a liquid, **abrasive** particles and a selectivity enhancer comprising a nucleic acid related compound.

DETAILED DESCRIPTION - An INDEPENDENT CLAIM is also included for a **CMP polishing** process for selectively removing **silicon dioxide** from the surface of workpiece containing surface areas of **silicon dioxide** and surface areas of silicon nitride in which the surface to be **polished** is contacted with a **polishing pad** and a **CMP slurry** is applied to the interface between the **polishing pad** the surface to be **polished**.

USE - The **slurry** is used for selectively removing **silicon dioxide** from the surface of a work-piece containing surface areas of **silicon dioxide** and surface areas of silicon nitride. It is useful in the manufacture of semiconductor wafers and chips.

ADVANTAGE - The **slurry** exhibits high selectivities for removing **silicon dioxide** in preference to silicon nitride.

Dwg.0/0

FS CPI EPI GMPI  
 FA AB; DCN  
 MC CPI: A12-A03; A12-E07C; B04-B03A; B04-B03B; B04-B03D; B04-B03E; B04-C03;  
 B04-E01; B05-B02C; B06-D09; B07-D04A; B07-D12; B10-A22; B10-B04B;  
 D05-H10; D05-H13  
 EPI: U11-A10; U11-C06A1A

L39 ANSWER 7 OF 34 WPIX COPYRIGHT 2005 THE THOMSON CORP on STN  
 AN 2005-120520 [13] WPIX  
 CR 2004-641155 [62]

DNN N2005-103959 DNC C2005-040088

TI **Chemical mechanical polishing slurry**  
 used in forming damascene wiring used for manufacturing semiconductor device, comprises solvent, **abrasive** grains, and silicone-based surfactant having specific hydrophilic lipophilic balance value.

DC A97 G04 L03 U11

IN MATSUI, Y; MINAMIHABA, G; YANO, H  
 PA (TOKE) TOSHIBA KK  
 CYC 1  
 PI US 2005009322 A1 20050113 (200513)\* 15 H01L021-4763  
 ADT US 2005009322 A1 Div ex US 2003-706052 20031113, US 2004-909287 20040803  
 FDT US 2005009322 A1 Div ex US 6794285  
 PRAI JP 2003-37179 20030214  
 IC ICM H01L021-4763  
 ICS H01L021-302; H01L021-461  
 AB US2005009322 A UPAB: 20050224  
 NOVELTY - A **chemical mechanical polishing (CMP)** slurry comprises a solvent, **abrasive** grains, and silicone-based surfactant having an hydrophilic lipophilic balance (HLB) value of 7-20.  
 USE - The **CMP slurry** is used in the formation of damascene wiring used for mounting a high-speed logic large scale integrated circuit (LSI), system LSI and memory/logic hybrid LSI. It is used in the manufacture of semiconductor device.  
 ADVANTAGE - The **slurry** allows the formation of damascene wiring, where the density of defects and the concentration of surface impurities can be minimized.  
 DESCRIPTION OF DRAWING(S) - The figure shows a cross-sectional view of a method of manufacturing a semiconductor device.  
 Plug 102  
 Laminated insulating films 103, 104  
 Barrier metal film 105  
 Wiring material film 106  
 Dwg.6A/6  
 FS CPI EPI  
 FA AB; GI  
 MC CPI: A05-H01B; A06-A00E; A12-A03; A12-W12C; G04-B04; L04-C13B; L04-C27  
 EPI: U11-A10; U11-C05D2; U11-C06A1A

L39 ANSWER 8 OF 34 HCAPLUS COPYRIGHT 2005 ACS on STN  
 AN 2004:392243 HCAPLUS  
 DN 140:398393  
 ED Entered STN: 14 May 2004  
 TI **Chemical mechanical polishing composition** and method  
 IN Li, Yuzhou; Keleher, Jason; Zhao, Junzi; Brancewicz, Chris  
 PA Sachem, Inc., USA  
 SO U.S. Pat. Appl. Publ., 31 pp.  
 CODEN: USXXCO  
 DT Patent  
 LA English  
 IC ICM C09K003-14  
 ICS H01L021-302; H01L021-461  
 INCL 438689000  
 CC 76-3 (Electric Phenomena)  
 FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI US 2004092102	A1	20040513	US 2002-292404	20021112
PRAI US 2002-292404		20021112		

## CLASS

PATENT NO.	CLASS	PATENT FAMILY CLASSIFICATION CODES
US 2004092102	ICM	C09K003-14
	ICS	H01L021-302; H01L021-461
	INCL	438689000

US 2004092102 NCL 438/689.000

ECLA C09G001/04; H01L021/321P2

- AB A **chemical-mech. polishing (CMP)** formulation and method for using the same. The **composition** is useful for **polishing** semiconductor substrates, and particularly substrate surfaces containing copper, tungsten, or alloys of the same. The **CMP** formulation may contain a copolymer enhancement agent such as a Pluronic compound (e.g., Pluronic P103, Pluronic P123, Pluronic F108, Pluronic F88, etc.), and/or a vesicle encapsulating agent, as well as an active agent that is chemical reactive with the substrate to enhance **polishing** performance. The active agent may be a bifunctional compound that is capable of functioning as both a passivating agent and a complexing agent to achieve an optimum rate of passivation and oxidation on the substrate surface. An active agent can also take the form of an oxidation activator, such as a metal ion, encapsulated in a vesicle or micelle, that is released with applied pressure to accelerate the removal process and improve planarization efficiency.
- ST **chem mech polishing compn process**
- IT Abrasives  
Diodes  
Hydrotropes  
Integrated circuits  
Interconnections, electric  
Oxidizing agents  
Transistors  
(**chemical-mech. polishing composition**  
and **polishing** method using same)
- IT Amines, uses  
Phospholipids, uses  
RL: NUU (Other use, unclassified); USES (Uses)  
(**chemical-mech. polishing composition**  
and **polishing** method using same)
- IT **Polishing**  
(**chemical-mech.; chemical-mech.**  
**polishing composition** and **polishing** method using  
same)
- IT Solvents  
(cosolvents; **chemical-mech. polishing**  
**composition** and **polishing** method using same)
- IT Acids, uses  
RL: NUU (Other use, unclassified); USES (Uses)  
(inorg.; **chemical-mech. polishing**  
**composition** and **polishing** method using same)
- IT Surfactants  
(nonionic; **chemical-mech. polishing**  
**composition** and **polishing** method using same)
- IT Acids, uses  
RL: NUU (Other use, unclassified); USES (Uses)  
(organic; **chemical-mech. polishing**  
**composition** and **polishing** method using same)
- IT Sulfonic acids, uses  
RL: NUU (Other use, unclassified); USES (Uses)  
(salts, aryl; **chemical-mech. polishing**  
**composition** and **polishing** method using same)
- IT Semiconductor materials  
(substrate; **chemical-mech. polishing**  
**composition** and **polishing** method using same)
- IT Copper alloy, base  
Tungsten alloy, base  
RL: DEV (Device component use); PEP (Physical, engineering or chemical

process); PYP (Physical process); PROC (Process); USES (Uses)  
 (chemical-mech. polishing composition  
 and polishing method using same)

IT 1306-38-3, Ceria, uses 1309-48-4, Magnesia, uses 1314-23-4, Zirconia,  
 uses 1344-28-1, Alumina, uses  
 RL: NUU (Other use, unclassified); USES (Uses)  
 (abrasive; chemical-mech. polishing  
 composition and polishing method using same)

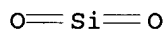
IT 7429-90-5, Aluminum, processes 7440-25-7, Tantalum, processes  
 7440-32-6, Titanium, processes 7440-33-7, Tungsten, processes  
 7440-50-8, Copper, processes  
 RL: DEV (Device component use); PEP (Physical, engineering or chemical  
 process); PYP (Physical process); PROC (Process); USES (Uses)  
 (chemical-mech. polishing composition  
 and polishing method using same)

IT 51-17-2, Benzimidazole 56-40-6, Glycine, uses 64-18-6, Formic acid,  
 uses 64-19-7, Acetic acid, uses 67-63-0, 2-Propanol, uses 79-09-4,  
 Propanoic acid, uses 107-21-1, Ethylene glycol, uses 112-60-7,  
 Tetraethylene glycol 144-62-7, Oxalic acid, uses 147-85-3, Proline,  
 uses 288-32-4D, Imidazole, derivative 1300-72-7, Sodium xylenesulfonate  
 1310-73-2, Sodium hydroxide, uses 7631-86-9, Silicon  
 oxide, uses 7647-01-0, Hydrochloric acid, uses 7664-41-7,  
 Ammonia, uses 7664-93-9, Sulfuric acid, uses 7697-37-2, Nitric acid,  
 uses 7732-18-5, Water, uses 10034-85-2, Hydrogen iodide  
 106392-12-5, Pluronic P103 203945-07-7, SiLK (dielectric)  
 RL: NUU (Other use, unclassified); USES (Uses)  
 (chemical-mech. polishing composition  
 and polishing method using same)

IT 7722-84-1, Hydrogen peroxide, reactions  
 RL: RCT (Reactant); RACT (Reactant or reagent)  
 (chemical-mech. polishing composition  
 and polishing method using same)

IT 7631-86-9, Silicon oxide, uses  
 106392-12-5, Pluronic P103  
 RL: NUU (Other use, unclassified); USES (Uses)  
 (chemical-mech. polishing composition  
 and polishing method using same)

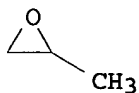
RN 7631-86-9 HCAPLUS  
 CN Silica (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)



RN 106392-12-5 HCAPLUS  
 CN Oxirane, methyl-, polymer with oxirane, block (9CI) (CA INDEX NAME)

CM 1

CRN 75-56-9  
 CMF C3 H6 O



CM 2

CRN 75-21-8  
CMF C2 H4 O



L39 ANSWER 9 OF 34 HCAPLUS COPYRIGHT 2005 ACS on STN  
AN 2004:759257 HCAPLUS  
DN 141:252819  
ED Entered STN: 17 Sep 2004  
TI Aluminum or glass substrates for magnetic hard disks, their manufacture,  
and **polishing slurries**  
IN Horie, Yuji; Okuyama, Hiromitsu; Tanifuji, Tatsuya  
PA Nippon Micro Coating Co., Ltd., Japan  
SO Jpn. Kokai Tokkyo Koho, 16 pp.  
CODEN: JKXXAF  
DT Patent  
LA Japanese  
IC ICM G11B005-73  
ICS B24B021-00; B24B037-00; C09K003-14; G11B005-84  
CC 77-8 (Magnetic Phenomena)  
Section cross-reference(s): 57

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 2004259417	A2	20040916	JP 2003-92680	20030224
	US 2004241379	A1	20041202	US 2004-776372	20040210
PRAI	JP 2003-92680	A	20030224		

CLASS

PATENT NO.	CLASS	PATENT FAMILY CLASSIFICATION CODES
JP 2004259417	ICM	G11B005-73
	ICS	B24B021-00; B24B037-00; C09K003-14; G11B005-84
JP 2004259417	FTERM	3C058/AA05; 3C058/AA07; 3C058/AA09; 3C058/AC04; 3C058/CB01; 3C058/CB03; 3C058/DA17; 5D006/CB04; 5D006/CB07; 5D006/DA03; 5D006/EA04; 5D112/AA02; 5D112/AA24; 5D112/BA06; 5D112/GA09; 5D112/GA13; 5D112/GA14
US 2004241379	NCL	428/848.200
	ECLA	G11B005/73N; G11B005/84B

AB The substrates are equipped with textured streaks of 70 lines/ $\mu$ m in the radius direction. Method for manufacture of the substrates includes **polishing** the substrates by pressing a running **polishing** tape towards the substrates that are rotating in the opposite direction, under feeding a **polishing slurry**. The **polishing slurry** contains single crystal diamond particles, polycryst. diamond particles, or their clusters having diameter 1-50 nm as **abrasive** grains and water or water-based solution as dispersants. The said **polishing slurries** containing clusters of the single crystal and/or polycryst. diamond particles are also claimed.

ST aluminum substrate **polishing** magnetic hard disk; glass substrate streaked surface hard disk; diamond cluster particle **abrasive polishing slurry**

IT Surfactants  
(anionic, **slurry** dispersant; manufacture of Al (alloy) or glass



- substrates with grooved surfaces for magnetic hard disks, by **polishing** with diamond cluster **abrasive slurries**)
- IT Clusters  
(diamond particle; manufacture of Al (alloy) or glass substrates with grooved surfaces for magnetic hard disks, by **polishing** with diamond cluster **abrasive slurries**)
- IT Amides, uses  
RL: TEM (Technical or engineered material use); USES (Uses)  
(fatty, **slurry** dispersant; manufacture of Al (alloy) or glass substrates with grooved surfaces for magnetic hard disks, by **polishing** with diamond cluster **abrasive slurries**)
- IT Surface structure  
(grooved; manufacture of Al (alloy) or glass substrates with grooved surfaces for magnetic hard disks, by **polishing** with diamond cluster **abrasive slurries**)
- IT Magnetic disks  
(hard; manufacture of Al (alloy) or glass substrates with grooved surfaces for magnetic hard disks, by **polishing** with diamond cluster **abrasive slurries**)
- IT Glass substrates  
**Polishing**  
(manufacture of Al (alloy) or glass substrates with grooved surfaces for magnetic hard disks, by **polishing** with diamond cluster **abrasive slurries**)
- IT Fatty acids, uses  
RL: TEM (Technical or engineered material use); USES (Uses)  
(metal salts, **slurry** dispersant; manufacture of Al (alloy) or glass substrates with grooved surfaces for magnetic hard disks, by **polishing** with diamond cluster **abrasive slurries**)
- IT Surfactants  
(**nonionic**, **slurry** dispersant; manufacture of Al (alloy) or glass substrates with grooved surfaces for magnetic hard disks, by **polishing** with diamond cluster **abrasive slurries**)
- IT Polyamide fibers, uses  
RL: TEM (Technical or engineered material use); USES (Uses)  
(**polishing** cloth; manufacture of Al (alloy) or glass substrates with grooved surfaces for magnetic hard disks, by **polishing** with diamond cluster **abrasive slurries**)
- IT **Slurries**  
(**polishing**; manufacture of Al (alloy) or glass substrates with grooved surfaces for magnetic hard disks, by **polishing** with diamond cluster **abrasive slurries**)
- IT Glycols, uses  
Phosphates, uses  
RL: TEM (Technical or engineered material use); USES (Uses)  
(**slurry** dispersant; manufacture of Al (alloy) or glass substrates with grooved surfaces for magnetic hard disks, by **polishing** with diamond cluster **abrasive slurries**)
- IT **Amines**, uses  
RL: TEM (Technical or engineered material use); USES (Uses)  
(vegetable oil, **slurry** dispersant; manufacture of Al (alloy) or glass substrates with grooved surfaces for magnetic hard disks, by **polishing** with diamond cluster **abrasive slurries**)
- IT Fats and Glyceridic oils, uses  
RL: TEM (Technical or engineered material use); USES (Uses)

(vegetable, amines, slurry dispersant; manufacture of Al (alloy) or glass substrates with grooved surfaces for magnetic hard disks, by **polishing** with diamond cluster **abrasive slurries**)

- IT. Aluminum alloy, base  
 RL: PEP (Physical, engineering or chemical process); PYP (Physical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)  
 (manufacture of Al (alloy) or glass substrates with grooved surfaces for magnetic hard disks, by **polishing** with diamond cluster **abrasive slurries**)
- IT 7782-40-3, Diamond, uses  
 RL: TEM (Technical or engineered material use); USES (Uses)  
 (**abrasive** particles; manufacture of Al (alloy) or glass substrates with grooved surfaces for magnetic hard disks, by **polishing** with diamond cluster **abrasive slurries**)
- IT 7429-90-5, Aluminum, processes  
 RL: PEP (Physical, engineering or chemical process); PYP (Physical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)  
 (manufacture of Al (alloy) or glass substrates with grooved surfaces for magnetic hard disks, by **polishing** with diamond cluster **abrasive slurries**)

L39 ANSWER 10 OF 34 HCAPLUS COPYRIGHT 2005 ACS on STN

AN 2004:198610 HCAPLUS

DN 140:244785

ED Entered STN: 11 Mar 2004

TI **Chemical-mechanical polishing** process for forming wiring structures, and abrasive **compositions** used therein

IN Sakai, Kenji; Tamai, Kazumasa; Kawamura, Atsunori; Matsuda, Takeshi; Hirano, Tatsuhiko; Ina, Katsuyoshi

PA Fujimi, Inc., Japan

SO Jpn. Kokai Tokkyo Koho, 22 pp.

CODEN: JKXXAF

DT Patent

LA Japanese

IC ICM C09K003-14

ICS B24B037-00; H01L021-304

CC 76-3 (Electric Phenomena)

Section cross-reference(s): 37, 57

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 2004075862	A2	20040311	JP 2002-238596	20020819
	US 2004084414	A1	20040506	US 2003-642929	20030818
PRAI	JP 2002-238596	A	20020819		

CLASS

PATENT NO.	CLASS	PATENT FAMILY CLASSIFICATION CODES
JP 2004075862	ICM	C09K003-14
	ICS	B24B037-00; H01L021-304
JP 2004075862	FTERM	3C058/AA07; 3C058/CB01; 3C058/DA02; 3C058/DA13; 3C058/DA17
US 2004084414	NCL	216/088.000
	ECLA	C09G001/02; C23F003/00

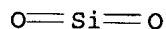
OS MARPAT 140:244785

AB The process for **polishing** of a material having a Cu-based elec. conductive layer formed on a barrier layer on an elec. insulating layer

having concave parts, involves (1) **polishing** of the elec. conductive layer not to expose the barrier layer with an abrasive **composition** containing abrasives (A) selected from SiO<sub>2</sub> and Al<sub>2</sub>O<sub>3</sub>, **polishing** accelerators (B) selected from glycine and α-alanine, H<sub>2</sub>O, and H<sub>2</sub>O<sub>2</sub>, (2) **polishing** of the elec. conductive layer to expose the barrier layer with an abrasive **composition** containing the abrasives (A), the **polishing** accelerators (B), organic compds. (C) selected from poly(ethylene oxide), poly(propylene oxide), polyoxyethylene alkyl ethers, polyoxypropylene alkyl ethers, polyoxyethylene-polyoxypropylene alkyl ethers, and polyoxyalkylene addition polymers having carbon triple bonds R<sub>10</sub>(X)mCR<sub>3</sub>R<sub>5</sub>C.tplbond.CCR<sub>4</sub>R<sub>6</sub>(Y)nOR<sub>2</sub> (R<sub>1</sub>-R<sub>6</sub> = H, C<sub>1</sub>-10 alkyl; X, Y = ethyleneoxy, propyleneoxy; m, n = 1-20), corrosion inhibitors (D) selected from benzotriazole and its derivs., H<sub>2</sub>O<sub>2</sub>, and H<sub>2</sub>O, and (3) **polishing** of the barrier layer with an abrasive **composition** containing the abrasives (A), acids (E) selected from HNO<sub>3</sub>, HCl, lactic acid, H<sub>3</sub>PO<sub>4</sub>, H<sub>2</sub>SO<sub>4</sub>, AcOH, oxalic acid, citric acid, tartaric acid, malonic acid, succinic acid, maleic acid, and fumaric acid or alkalies (F) selected from KOH, NH<sub>4</sub>OH, and NaOH, the corrosion inhibitors (D), and H<sub>2</sub>O. The process prevents dishing or erosion.

- ST **chem mech polishing** abrasive compn  
wiring; dishing erosion prevention **chem mech**  
**polishing**
- IT Alcohols, uses  
RL: NUU (Other use, unclassified); TEM (Technical or engineered material use); USES (Uses)  
(alkoxylated; **chemical-mech. polishing**  
process and abrasive compns. for forming wiring structures  
without dishing or erosion)
- IT Polyoxyalkylenes, uses  
RL: NUU (Other use, unclassified); TEM (Technical or engineered material use); USES (Uses)  
(alkyl ethers; **chemical-mech. polishing**  
process and abrasive compns. for forming wiring structures  
without dishing or erosion)
- IT Abrasives  
Corrosion inhibitors  
Electric conductors  
**Polishing materials**  
Semiconductor device fabrication  
(**chemical-mech. polishing** process and  
abrasive compns. for forming wiring structures without  
dishing or erosion)
- IT Acids, uses  
Bases, uses  
Polyoxyalkylenes, uses  
Polyoxyalkylenes, uses  
RL: NUU (Other use, unclassified); TEM (Technical or engineered material use); USES (Uses)  
(**chemical-mech. polishing** process and  
abrasive compns. for forming wiring structures without  
dishing or erosion)
- IT **Polishing**  
(**chemical-mech.; chemical-mech.**  
**polishing** process and abrasive compns. for forming  
wiring structures without dishing or erosion)
- IT Alcohols, uses  
RL: NUU (Other use, unclassified); TEM (Technical or engineered material use); USES (Uses)  
(ethoxylated; **chemical-mech. polishing**

- process and abrasive **compns.** for forming wiring structures without dishing or erosion)
- IT Polyoxyalkylenes, uses  
RL: NUU (Other use, unclassified); TEM (Technical or engineered material use); USES (Uses)  
(mono(alkyl group)-terminated; **chemical-mech. polishing** process and abrasive **compns.** for forming wiring structures without dishing or erosion)
- IT 7440-50-8, Copper, processes  
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process); USES (Uses)  
(**chemical-mech. polishing** process and abrasive **compns.** for forming wiring structures without dishing or erosion)
- IT 50-21-5, Lactic acid, uses 56-40-6, Glycine, uses 56-41-7, α-Alanine, uses 64-19-7, Acetic acid, uses 77-92-9, Citric acid, uses 87-69-4, Tartaric acid, uses 110-15-6, Succinic acid, uses 110-16-7, Maleic acid, uses 110-17-8, Fumaric acid, uses 141-82-2, Malonic acid, uses 144-62-7, Oxalic acid, uses 1310-58-3, Potassium hydroxide, uses 1310-73-2, Sodium hydroxide, uses 1336-21-6, Ammonium hydroxide 1344-28-1, Aluminum oxide, uses 7647-01-0, Hydrochloric acid, uses 7664-38-2, Phosphoric acid, uses 7664-93-9, Sulfuric acid, uses 7697-37-2, Nitric acid, uses 7722-84-1, Hydrogen peroxide, uses 9003-11-6D, **Ethylene oxide-propylene oxide** copolymer, alkyl ethers 9014-85-1 25322-68-3, Poly(**ethylene oxide**) 25322-68-3D, Polyethylene glycol, alkyl ethers 25322-69-4, Poly(**propylene oxide**) 25322-69-4D, Polypropylene glycol, alkyl ethers  
RL: NUU (Other use, unclassified); TEM (Technical or engineered material use); USES (Uses)  
(**chemical-mech. polishing** process and abrasive **compns.** for forming wiring structures without dishing or erosion)
- IT 7631-86-9, Colloidal **silica**, uses  
RL: NUU (Other use, unclassified); TEM (Technical or engineered material use); USES (Uses)  
(colloidal; **chemical-mech. polishing** process and abrasive **compns.** for forming wiring structures without dishing or erosion)
- IT 95-14-7, 1H-Benzotriazole  
RL: NUU (Other use, unclassified); TEM (Technical or engineered material use); USES (Uses)  
(corrosion inhibitor; **chemical-mech. polishing** process and abrasive **compns.** for forming wiring structures without dishing or erosion)
- IT 7631-86-9, Colloidal **silica**, uses  
RL: NUU (Other use, unclassified); TEM (Technical or engineered material use); USES (Uses)  
(colloidal; **chemical-mech. polishing** process and abrasive **compns.** for forming wiring structures without dishing or erosion)
- RN 7631-86-9 HCAPLUS  
CN Silica (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)



AN 2004:159198 HCAPLUS  
 DN 140:191477  
 ED Entered STN: 27 Feb 2004  
 TI Lapping oil **compositions** for finish **polishing** of  
 composites constituted by multiple different-hardness materials,  
 especially thin-film magnetic heads  
 IN Saito, Isao; Orii, Kazuya  
 PA Tokyo Magnetic Printing Co., Ltd., Japan  
 SO Jpn. Kokai Tokkyo Koho, 9 pp.  
 CODEN: JKXXAF  
 DT Patent  
 LA Japanese  
 IC ICM B24B037-00  
 ICS C09K003-14; G11B005-31  
 CC 77-8 (Magnetic Phenomena)  
 Section cross-reference(s): 38, 57

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 2004058220	A2	20040226	JP 2002-220920	20020730
PRAI	JP 2002-220920		20020730		

CLASS

PATENT NO.	CLASS	PATENT FAMILY CLASSIFICATION CODES
JP. 2004058220	ICM	B24B037-00
	ICS	C09K003-14; G11B005-31
JP 2004058220	FTERM	3C058/AA07; 3C058/AC04; 3C058/CA01; 3C058/CB02; 3C058/DA02; 5D033/DA22; 5D033/DA31

OS MARPAT 140:191477

AB The lapping oil **compsn.**, free from **abrasive** grains,  
 contain nonaq. solvents and amine additives. The composites, e.g.,  
 metal-ceramic composites, subjected for main **polishing** with  
 dropping nonaq.-solvent **slurries** containing **nonionic**  
**surfactants** as disperse medium and free **abrasive** grains,  
 are finish **polished** with the lapping oil **compsn.** with  
 dropping the **compsn.** The lapping oil **compsn.** can  
 easily exclude unfixed **abrasive** grains for achieving high  
 precise finish **polishing**.

ST finish **polishing** lapping oil additive amine; composite finish  
**polishing** lapping oil additive amine; magnetic head finish  
**polishing** lapping oil additive amine; metal ceramic composite  
 finish **polishing** lapping oil

IT Alcohols, uses

RL: MOA (Modifier or additive use); TEM (Technical or engineered material  
 use); USES (Uses)  
 (amino; lapping oil **compsn.** containing **amine** additives  
 for finish **polishing** of composites, especially thin-film magnetic  
 heads)

IT Metals, processes

RL: PEP (Physical, engineering or chemical process); PYP (Physical  
 process); PROC (Process)  
 (composites containing; lapping oil **compsn.** containing **amine**  
 additives for finish **polishing** of composites, especially thin-film  
 magnetic heads)

IT Amines, uses

RL: MOA (Modifier or additive use); TEM (Technical or engineered material  
 use); USES (Uses)  
 (ethoxylated; lapping oil **compsn.** containing **amine**  
 additives for finish **polishing** of composites, especially thin-film  
 magnetic heads)

IT **Polishing**  
(finish; lapping oil **compns.** containing **amine** additives  
for finish **polishing** of composites, especially thin-film magnetic  
heads)

IT Ceramic composites  
Magnetic recording heads  
**Polishing materials**  
(lapping oil **compns.** containing **amine** additives for  
finish **polishing** of composites, especially thin-film magnetic  
heads)

IT **Amines, uses**  
RL: MOA (Modifier or additive use); TEM (Technical or engineered material  
use); USES (Uses)  
(secondary; lapping oil **compns.** containing **amine**  
additives for finish **polishing** of composites, especially thin-film  
magnetic heads)

IT **Amines, uses**  
RL: MOA (Modifier or additive use); TEM (Technical or engineered material  
use); USES (Uses)  
(tertiary; lapping oil **compns.** containing **amine**  
additives for finish **polishing** of composites, especially thin-film  
magnetic heads)

IT 51427-90-8, Iron alloy, Fe,Al,Si  
RL: DEV (Device component use); PEP (Physical, engineering or chemical  
process); PYP (Physical process); PROC (Process); USES (Uses)  
(Sendust, in magnetic heads; lapping oil **compns.** containing  
**amine** additives for finish **polishing** of composites,  
especially thin-film magnetic heads)

IT 11068-82-9 113724-99-5, Aluminum titanium carbide oxide  
RL: DEV (Device component use); PEP (Physical, engineering or chemical  
process); PYP (Physical process); PROC (Process); USES (Uses)  
(in magnetic heads; lapping oil **compns.** containing **amine**  
additives for finish **polishing** of composites, especially thin-film  
magnetic heads)

IT 110-58-7, Amylamine 111-86-4, Octylamine 112-18-5,  
Dodecyldimethylamine 112-90-3, Oleylamine 124-22-1, Dodecylamine  
124-30-1, Stearylamine 52811-24-2  
RL: MOA (Modifier or additive use); TEM (Technical or engineered material  
use); USES (Uses)  
(lapping oil **compns.** containing **amine** additives for  
finish **polishing** of composites, especially thin-film magnetic  
heads)

L39 ANSWER 12 OF 34 WPIX COPYRIGHT 2005 THE THOMSON CORP on STN  
AN 2004-487944 [46] WPIX  
DNN N2004-384927 DNC C2004-181839  
TI **Slurry composition** for secondary **polishing**  
of silicon wafers, comprises hydroxyalkylcellulose-based water-soluble  
polymeric thickener and polyoxyethylenealkylamine ether-based  
**nonionic surfactant.**

DC A11 A25 A85 A97 E19 G04 L03 U11  
IN LEE, G S; LEE, I G; NOH, H S; PARK, T W; LEE, I K; LEE, K S; ROH, H S  
PA (CHEI-N) CHEIL IND INC  
CYC 31  
PI WO 2004053968 A1 20040624 (200446)\* EN 14 H01L021-304  
RW: AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HU IE IT LU MC NL PT RO  
SE SI SK TR  
W: CN JP US  
KR 2004050726 A 20040617 (200466) H01L021-304  
EP 1570512 A1 20050907 (200559) EN H01L021-304

R: AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HU IE IT LI LU MC NL PT  
RO SE SI SK TR

ADT WO 2004053968 A1 WO 2003-KR1532 20030730; KR 2004050726 A KR 2002-77860  
20021209; EP 1570512 A1 EP 2003-812702 20030730, WO 2003-KR1532 20030730

FDT EP 1570512 A1 Based on WO 2004053968

PRAI KR 2002-77860 20021209

IC ICM H01L021-304

AB WO2004053968 A UPAB: 20040720

NOVELTY - A slurry composition comprises (weight%)  
colloidal silica having an average particle diameter of 30-80 nm  
as an abrasive (2-10), ammonia (0.5-1.5), a  
hydroxyalkylcellulose-based water-soluble polymeric thickener (0.2-1), a  
polyoxyethylenealkylamine ether-based nonionic  
surfactant (0.03-0.5), a quaternary ammonium base (0.01-1), and  
deionized water (balance).

USE - For secondary polishing of silicon wafers during  
chemical mechanical polishing (CMP)  
process.

ADVANTAGE - The composition is capable of increasing the  
dispersion stability of silica as an abrasive to  
improve the polishing quality on pitted microscratches and  
reducing the amount of silica particles to lower the  
manufacturing cost. It has a low concentration of silica and  
high dispersibility.

Dwg.0/0

FS CPI EPI

FA AB; DCN

MC CPI: A03-A04A; A12-E07C; E07-D05; E10-A22E; E10-A22G; E10-B03B3; E31-P03;  
E32-A02; G04-B08; L04-C27

EPI: U11-A10; U11-C06A1A

L39 ANSWER 13 OF 34 WPIX COPYRIGHT 2005 THE THOMSON CORP on STN

AN 2004-784203 [77] WPIX

DNN N2004-618064 DNC C2004-274426

TI Aqueous solution for use in processing semiconductor wafers, comprises  
block copolymer surfactant and abrasive particles of silica,  
alumina, and/or ceria.

DC A25 A26 A85 L03 U11

IN COOPER, K E; FLAKE, J C; GROSCHOPF, J; SOLOMENTSEV, Y E

PA (COOP-I) COOPER K E; (FLAK-I) FLAKE J C; (GROS-I) GROSCHOPF J; (SOLO-I)  
SOLOMENTSEV Y E

CYC 1

PI US 2004224426 A1 20041111 (200477)\* 7 H01L021-00

ADT US 2004224426 A1 US 2003-430987 20030507

PRAI US 2003-430987 20030507

IC ICM H01L021-00

ICS C09K003-14

AB US2004224426 A UPAB: 20041203

NOVELTY - Aqueous solution comprises a block copolymer surfactant having a  
hydrophobic portion and a hydrophilic portion, and abrasive particles. The  
abrasive particles comprise silica, alumina, and/or ceria.

DETAILED DESCRIPTION - An INDEPENDENT CLAIM is also included for a  
method for processing semiconductor wafers comprising providing a  
semiconductor wafer (150) having a wafer surface to a semiconductor  
processing stage, and applying a block copolymer surfactant having a  
hydrophobic portion and a hydrophilic portion to the wafer surface during  
the semiconductor processing stage.

USE - For use in processing semiconductor wafers (claimed).

ADVANTAGE - The inventive aqueous solution is a reliable solution  
that minimizes surface defects and does not require large additive

concentrations. The surfactant in the aqueous solution is a surface-active agent that reduces surface tension of a liquid or surface tension between a liquid and a solid.

DESCRIPTION OF DRAWING(S) - The figure illustrates a schematic of a **chemical mechanical polishing** processing tool that can be used in processing semiconductor wafers.

**Chemical mechanical polishing tool 100**

Semiconductor wafer 150

Polish film 155

Drive assembly 191

Actuator assembly 192

Dwg.1/2

FS CPI EPI

FA AB; GI

MC CPI: A12-H10; A12-W12C; L04-C07C; L04-C07F; L04-C09; L04-C27

EPI: U11-A10; U11-C06A1A

L39 ANSWER 14 OF 34 WPIX COPYRIGHT 2005 THE THOMSON CORP on STN

AN 2004-286736 [27] WPIX

DNN N2004-227376 DNC C2004-110441

TI Application **composition** for manufacture of insulating thin film, contains organic polymer, organic solvent(s) and **silica** precursor containing compound(s) chosen from alkoxysilane and its hydrolysis substance, and polycondensate.

DC A26 A85 L03 U11

PA (ASAH) ASahi KASEI KK

CYC 1

PI JP 2004018608 A 20040122 (200427)\* 28 C09D183-04

ADT JP 2004018608 A JP 2002-173542 20020614

PRAI JP 2002-173542 20020614

IC ICM C09D183-04

ICS C09D001-00; C09D005-25; C09D171-02; C09D183-02; H01L021-316; H01L021-768

AB JP2004018608 A UPAB: 20040426

NOVELTY - Application **composition** contains **silica** precursor, organic polymer and organic solvent(s) chosen from alcohol, ketone, amide and ester. The **silica** precursor contains compound(s) chosen from 1-6 functional alkoxysilane and its hydrolysis substance, and polycondensate. The organic polymer contains aliphatic ether block copolymer of binary or ternary.

DETAILED DESCRIPTION - Application **composition** contains **silica** precursor, organic polymer and at least one type of organic solvent selected from alcohol, ketone, amide and ester. The **silica** precursor contains at least one type of compound chosen from 1-6 functional alkoxysilane and its hydrolysis substance, and a polycondensate. The alkoxysilane is of formula (1) and/or formula (2):

$R_1n(Si)(OR_2)_{4-n}$  (1)

$R_3m(R_4O)_3-mSi-(R_7)p-Si(OR_5)_3-qR_6q$  (2)

R1-R6 = hydrogen or univalent organic group;

n = 0-3;

m and q = 0-2;

R7 = group with oxygen atom or (CH<sub>2</sub>)<sub>r</sub>;

r = 1-6; and

p = 0 or 1.

The sum of silicon atom originating in the alkoxysilane of 1-3 functionality and its hydrolysis substance, and polycondensate with respect to the total of the silicon atom originating in the alkoxysilane and its hydrolysis substance, is 5-80 mol%. The organic polymer contains 10 weight% or more of aliphatic ether block copolymer of binary or ternary except poly(ethylene oxide)-poly(propylene



oxide)-poly(ethylene oxide) which is a ternary block copolymer, with respect to all organic polymers. The block copolymer is of formula:  $((R8O)_x-(R10O)_y-(R9O)_z)$ .

R8-R10 = 1-10C alkylene group;

x = 2-200;

y = 2-100; and

z = 0-200.

INDEPENDENT CLAIMS are included for the following:

(1) insulating thin film;

(2) wiring structure using the insulating thin film as insulator; and

(3) semiconductor element with wiring structure.

USE - For manufacture of insulating thin film for wiring structure used for semiconductor element (claimed) and large scale integrated multilayer interconnections.

ADVANTAGE - The porous thin film with stable and low dielectric constant, is formed using the application **composition**. The thin film has mechanical strength which endures **chemical mechanical polishing** process in copper-wiring process of semiconductor element, and hence suitable for insulating films of substrate for large scale integration multilayer interconnections or semiconductor element.

Dwg.0/0

FS CPI EPI

FA AB

MC CPI: A05-H01B; A06-A00E2; A08-S02; A12-E07C; L04-C12E

EPI: U11-C05A

L39 ANSWER 15 OF 34 HCAPLUS COPYRIGHT 2005 ACS on STN

AN 2003:481849 HCAPLUS

DN 139:40498

ED Entered STN: 24 Jun 2003

TI Abrasive **compositions** for **CMP** of device wafers

IN Miyazaki, Tadakazu

PA Sanyo Chemical Industries, Ltd., Japan

SO Jpn. Kokai Tokkyo Koho, 8 pp.

CODEN: JKXXAF

DT Patent

LA Japanese

IC ICM C09K003-14

ICS B24B037-00; H01L021-304

CC 57-7 (Ceramics)

Section cross-reference(s): 76

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 2003176479	A2	20030624	JP 2002-280113	20020926
PRAI	JP 2001-298001	A	20010927		

CLASS

PATENT NO.	CLASS	PATENT FAMILY CLASSIFICATION CODES
JP 2003176479	ICM	C09K003-14
	ICS	B24B037-00; H01L021-304

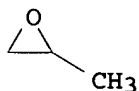
AB The abrasive **compsns.** contain polyoxyalkylene ethers represented by general formula  $Z[(CH_2CH_2O)_a(AO)_b]_p$  [R = C1-18 alkenyl, C2-18 alkenyl or alkapolyenyl, C2-24 acyl, H; Z = H-removed residues of C1-12 p-valent alcs.; A = C3-4 alkylene; a, b = 1-100 integer; units of  $(CH_2CH_2O)$  and  $(AO)$  are randomly bonded or block bonded; weight ratio of  $CH_2CH_2O$  group and  $AO$  group = 30/70-70/30' p = 1-6 integer], aliphatic carboxylic acid amides, and water. The abrasives may comprise inorg. compds. selected from  $SiO_2$ ,  $Al_2O_3$ , Ce oxide,  $Si_3N_4$ , and  $ZrO_2$ .

In the process, device wafers with wirings being formed are polished with the abrasive compns. Scratches on wafer surfaces have been suppressed.

- ST chem mech polishing abrasive compn  
surfactant; semiconductor device wafer CMP abrasive compn; polyoxyalkylene nonionic surfactant chem mech polishing; aliph carboxylic acid amide surfactant CMP
- IT Abrasives  
(abrasive compns. containing polyoxyalkylene ethers and aliphatic carboxylic acid amides for CMP of device wafers)
- IT Amides, uses  
RL: MOA (Modifier or additive use); NUU (Other use, unclassified); USES (Uses)  
(aliphatic; abrasive compns. containing polyoxyalkylene ethers and aliphatic carboxylic acid amides for CMP of device wafers)
- IT Polishing  
(chemical-mech.; abrasive compns. containing polyoxyalkylene ethers and aliphatic carboxylic acid amides for CMP of device wafers)
- IT Polyoxyalkylenes, uses  
RL: MOA (Modifier or additive use); NUU (Other use, unclassified); USES (Uses)  
(ethers; abrasive compns. containing polyoxyalkylene ethers and aliphatic carboxylic acid amides for CMP of device wafers)
- IT Surfactants  
(nonionic; abrasive compns. containing polyoxyalkylene ethers and aliphatic carboxylic acid amides for CMP of device wafers)
- IT 93-83-4, Oleic acid diethanolamide 111-58-0, Oleic acid monoethanolamide 106392-12-5, Ethylene oxide-propylene oxide block copolymer  
RL: MOA (Modifier or additive use); NUU (Other use, unclassified); USES (Uses)  
(abrasive compns. containing polyoxyalkylene ethers and aliphatic carboxylic acid amides for CMP of device wafers)
- IT 1306-38-3, Cerium oxide, uses 1314-23-4, Zirconium oxide, uses 1344-28-1, Alumina, uses 12033-89-5, Silicon nitride, uses  
RL: NUU (Other use, unclassified); USES (Uses)  
(abrasive compns. containing polyoxyalkylene ethers and aliphatic carboxylic acid amides for CMP of device wafers)
- IT 7631-86-9, Colloidal silica, uses  
RL: NUU (Other use, unclassified); USES (Uses)  
(colloidal; abrasive compns. containing polyoxyalkylene ethers and aliphatic carboxylic acid amides for CMP of device wafers)
- IT 106392-12-5, Ethylene oxide-propylene oxide block copolymer  
RL: MOA (Modifier or additive use); NUU (Other use, unclassified); USES (Uses)  
(abrasive compns. containing polyoxyalkylene ethers and aliphatic carboxylic acid amides for CMP of device wafers)
- RN 106392-12-5 HCAPLUS
- CN Oxirane, methyl-, polymer with oxirane, block (9CI) (CA INDEX NAME)

CM 1

CRN 75-56-9  
CMF C3 H6 O



CM 2

CRN 75-21-8

CMF C2 H4 O



IT 7631-86-9, Colloidal silica, uses  
 RL: NUU (Other use, unclassified); USES (Uses)  
 (colloidal; abrasive **compns.** containing polyoxyalkylene ethers  
 and aliphatic carboxylic acid amides for **CMP** of device wafers)  
 RN 7631-86-9 HCAPLUS  
 CN Silica (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)



L39 ANSWER 16 OF 34 HCAPLUS COPYRIGHT 2005 ACS on STN  
 AN 2003:443964 HCAPLUS  
 DN 139:15944  
 ED Entered STN: 10 Jun 2003  
 TI Coating **composition** for manufacture of electrically insulating  
 porous **silica** film used in wiring structure of semiconductor  
 device  
 IN Hanahata, Hiroyuki  
 PA Asahi Kasei Corporation, Japan  
 SO Jpn. Kokai Tokkyo Koho, 15 pp.  
 CODEN: JKXXAF  
 DT Patent  
 LA Japanese  
 IC ICM C09D183-02  
 ICS C01B033-12; C09D001-00; C09D005-25; C09D153-00; C09D171-02;  
 C09D183-04; H01L021-312; H01L021-316  
 CC 76-3 (Electric Phenomena)  
 Section cross-reference(s): 38  
 FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI JP 2003165952	A2	20030610	JP 2001-364582	20011129
PRAI JP 2001-364582		20011129		

CLASS

PATENT NO.	CLASS	PATENT FAMILY CLASSIFICATION CODES
JP 2003165952	ICM	C09D183-02
	ICS	C01B033-12; C09D001-00; C09D005-25; C09D153-00; C09D171-02; C09D183-04; H01L021-312; H01L021-316

OS MARPAT 139:15944  
 AB The **composition** comprises (1) **silica** precursors containing (A)

Si(OR)<sub>4</sub> (R<sub>1</sub> = divalent organic group), its hydrolyzate, and/or its polycondensate and/or (B) R<sub>2</sub>Si(OR)<sub>3</sub> (R<sub>1</sub>, R<sub>2</sub> = divalent organic group), its hydrolyzate, and/or its polycondensate to satisfy mol. fraction of (B-derived Si)/[(A-derived Si) + (B-derived Si)] 1-50 mol% (excluding 50 mol%), (2) organic polymers containing linear or branched block copolymers, and (3) solvents of alcs., ketones, amides, and/or esters. The porous SiO<sub>2</sub> film is manufactured by coating a substrate with the compn., converting the silica precursors to a gel to give a silica-organic polymer composite film, and removing the organic polymers from the composite film. The porous film has low dielec. constant and high durability in chemical mech. polishing in Cu wiring process, and scarcely generates pollutant gases in via-hole formation.

- ST silica precursor org polymer porous film insulator; alkoxysilane block copolymer porous silica film manuf
- IT Silanes  
 RL: RCT (Reactant); RACT (Reactant or reagent)  
 (alkoxy; alkoxysilane-organic block copolymer compns. for manufacture of elec. insulating porous silica film in semiconductor device)
- IT Dielectric films  
 Semiconductor devices  
 Sol-gel processing  
 (alkoxysilane-organic block copolymer compns. for manufacture of elec. insulating porous silica film in semiconductor device)
- IT Porous materials  
 (films; alkoxysilane-organic block copolymer compns. for manufacture of elec. insulating porous silica film in semiconductor device)
- IT Films  
 (porous; alkoxysilane-organic block copolymer compns. for manufacture of elec. insulating porous silica film in semiconductor device)
- IT 7631-86-9P, Silica, uses  
 RL: DEV (Device component use); IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)  
 (alkoxysilane-organic block copolymer compns. for manufacture of elec. insulating porous silica film in semiconductor device)
- IT 132894-01-0, Ethylene oxide-propylene oxide block copolymer dimethyl ether  
 RL: NUU (Other use, unclassified); REM (Removal or disposal); PROC (Process); USES (Uses)  
 (alkoxysilane-organic block copolymer compns. for manufacture of elec. insulating porous silica film in semiconductor device)
- IT 78-10-4, Tetraethoxysilane 2031-67-6, Methyltriethoxysilane  
 RL: RCT (Reactant); RACT (Reactant or reagent)  
 (alkoxysilane-organic block copolymer compns. for manufacture of elec. insulating porous silica film in semiconductor device)
- IT 24991-55-7, Polyethylene glycol dimethyl ether  
 RL: NUU (Other use, unclassified); REM (Removal or disposal); PROC (Process); USES (Uses)  
 (block copolymers mixed with; alkoxysilane-organic block copolymer compns. for manufacture of elec. insulating porous silica film in semiconductor device)
- IT 7631-86-9P, Silica, uses  
 RL: DEV (Device component use); IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)  
 (alkoxysilane-organic block copolymer compns. for manufacture of elec. insulating porous silica film in semiconductor device)
- RN 7631-86-9 HCAPLUS

CN Silica (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)

O=Si=O

L39 ANSWER 17 OF 34 HCAPLUS COPYRIGHT 2005 ACS on STN  
 AN 2003:239915 HCAPLUS  
 DN 138:264107  
 ED Entered STN: 28 Mar 2003  
 TI Coating **composition** for manufacture of porous insulating  
**silica** film in wiring structure in semiconductor device  
 IN Hanahata, Hiroyuki; Ioka, Takaaki  
 PA Asahi Kasei Corporation, Japan  
 SO Jpn. Kokai Tokkyo Koho, 18 pp.  
 CODEN: JKXXAF  
 DT Patent  
 LA Japanese  
 IC ICM C09D183-04  
 ICS C09D171-00; C09D183-02; C09D183-14; H01L021-316  
 CC 76-3 (Electric Phenomena)  
 Section cross-reference(s): 37

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 2003089769	A2	20030328	JP 2001-283539	20010918
PRAI	JP 2001-283539		20010918		

CLASS

PATENT NO.	CLASS	PATENT FAMILY CLASSIFICATION CODES
JP 2003089769	ICM	C09D183-04
	ICS	C09D171-00; C09D183-02; C09D183-14; H01L021-316

AB The **composition** comprises (A) **silica** precursors containing  
 $R_1nSi(OR_2)_{4-n}$  ( $R_1$ ,  $R_2$  = monovalent organic residue;  $n = 0-3$ ) and/or  
 $R_3m(R_4O)_{3-m}SiR_7pSi(OR_5)_{3-q}R_6q$  ( $R_3-R_6$  = monovalent organic residue;  $m$ ,  $q =$   
 $0-2$ ;  $R_7 = O$ ,  $(CH_2)_r$ ;  $r = 1-6$ ;  $p = 0, 1$ ), their hydrolyzates, and/or their  
 polycondensation products to satisfy Si molar fraction of mono-, di- and  
 trifunctional alkoxysilanes to total Si in mono-, di-, tri-, tetra-,  
 penta- and hexa-functional alkoxysilanes 1-50 mol%, (B) linear or branched  
 polyether block copolymer-containing organic polymers, and (C) organic solvents of  
 alcs., ketones, amides, and/or esters. The porous insulating film claimed  
 is obtained by coating a substrate with the **composition**, forming a  
**silica**/organic polymer composite film by gelation of the  
**silica** precursors, and removing the organic polymers from the  
 composite film. The porous film has low specific dielec. constant and high  
 durability in **chemical mech. polishing** in Cu  
 wiring process for semiconductor device fabrication and scarcely generates  
 pollutant gases in via-hole formation.

ST semiconductor device wiring porous **silica** insulator film;  
**silica** precursor org polymer coating insulator manuf; alkoxysilane  
 polyether block copolymer coating **silica** film manuf

IT Silanes  
 RL: RCT (Reactant); RACT (Reactant or reagent)  
 (alkoxy; alkoxysilane- and organic polymer-containing coating **composition**  
 for manufacture of porous insulating **silica** film in wiring  
 structure in semiconductor device)

IT Dielectric films  
 Semiconductor devices  
 Sol-gel processing

(alkoxysilane- and organic polymer-containing coating **composition** for manufacture of porous insulating **silica** film in wiring structure in semiconductor device)

IT Polyoxyalkylenes, processes  
RL: CPS (Chemical process); NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)  
(block; alkoxysilane- and organic polymer-containing coating **composition** for manufacture of porous insulating **silica** film in wiring structure in semiconductor device)

IT Porous materials  
(films; alkoxysilane- and organic polymer-containing coating **composition** for manufacture of porous insulating **silica** film in wiring structure in semiconductor device)

IT Films  
(porous; alkoxysilane- and organic polymer-containing coating **composition** for manufacture of porous insulating **silica** film in wiring structure in semiconductor device)

IT Polysiloxanes, preparation  
RL: IMF (Industrial manufacture); RCT (Reactant); PREP (Preparation); RACT (Reactant or reagent)  
(silicate-, **silica** precursor; alkoxysilane- and organic polymer-containing coating **composition** for manufacture of porous insulating **silica** film in wiring structure in semiconductor device)

IT 24991-55-7, Polyethylene glycol dimethyl ether 106392-12-5, Polyethylene glycol-polypropylene glycol block copolymer  
RL: CPS (Chemical process); NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)  
(alkoxysilane- and organic polymer-containing coating **composition** for manufacture of porous insulating **silica** film in wiring structure in semiconductor device)

IT 7631-86-9P, **Silica**, uses  
RL: DEV (Device component use); IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)  
(alkoxysilane- and organic polymer-containing coating **composition** for manufacture of porous insulating **silica** film in wiring structure in semiconductor device)

IT 502612-69-3P, Bis(triethoxysilyl)ethane-dimethyldiethoxysilane-tetraethoxysilane copolymer  
RL: IMF (Industrial manufacture); RCT (Reactant); PREP (Preparation); RACT (Reactant or reagent)  
(**silica** precursor; alkoxysilane- and organic polymer-containing coating **composition** for manufacture of porous insulating **silica** film in wiring structure in semiconductor device)

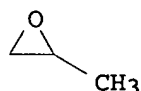
IT 106392-12-5, Polyethylene glycol-polypropylene glycol block copolymer  
RL: CPS (Chemical process); NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)  
(alkoxysilane- and organic polymer-containing coating **composition** for manufacture of porous insulating **silica** film in wiring structure in semiconductor device)

RN 106392-12-5 HCAPLUS  
CN Oxirane, methyl-, polymer with oxirane, block (9CI) (CA INDEX NAME)

CM 1

CRN 75-56-9

CMF C3 H6 O



CM 2

CRN 75-21-8

CMF C2 H4 O

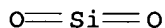


IT 7631-86-9P, Silica, uses

RL: DEV (Device component use); IMF (Industrial manufacture); TEM  
(Technical or engineered material use); PREP (Preparation); USES (Uses)  
(alkoxysilane- and organic polymer-containing coating **composition** for  
manufacture of porous insulating **silica** film in wiring structure  
in semiconductor device)

RN 7631-86-9 HCAPLUS

CN Silica (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)



L39 ANSWER 18 OF 34 HCAPLUS COPYRIGHT 2005 ACS on STN

AN 2003:239914 HCAPLUS

DN 138:264106

ED Entered STN: 28 Mar 2003

TI Coating **composition** for manufacture of porous insulating  
**silica** film in wiring structure in semiconductor device

IN Hanahata, Hiroyuki; Ioka, Takaaki

PA Asahi Kasei Corporation, Japan

SO Jpn. Kokai Tokkyo Koho, 17 pp.

CODEN: JKXXAF

DT Patent

LA Japanese

IC ICM C09D183-02

ICS C09D001-00; C09D005-25; C09D183-04; C09D201-00; H01L021-312

CC 76-3 (Electric Phenomena)

Section cross-reference(s): 37

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 2003089768	A2	20030328	JP 2001-283571	20010918
PRAI	JP 2001-283571		20010918		

CLASS

PATENT NO.	CLASS	PATENT FAMILY CLASSIFICATION CODES
JP 2003089768	ICM	C09D183-02
	ICS	C09D001-00; C09D005-25; C09D183-04; C09D201-00; H01L021-312

AB The **composition** comprises (A) **silica** precursors containing (1)  
Si(OR)<sub>4</sub>, their hydrolyzates, and/or their polycondensation products and

- (2) R22Si(OR1)2 and/or R23Si(OR1), their hydrolyzates, and/or their polycondensation products (R1, R2 = monovalent organic residue) to satisfy Si molar fraction in (2) to total Si in (1) and (2) 1-50 mol%, (B) linear or branched block copolymer-containing organic polymers, and (C) solvents of alcs., ketones, amides, and/or esters. The porous insulating film is manufactured by coating a substrate with the **composition**, forming a **silica** /organic polymer composite film by gelation of the **silica** precursors, and removing the organic polymers from the composite film. The porous film has low specific dielec. constant and high durability in **chemical mech. polishing** in Cu wiring process for semiconductor device fabrication and scarcely generates pollutant gases in via-hole formation.
- ST semiconductor device wiring porous **silica** insulator film;  
**silica** precursor org polymer coating insulator manuf; alkoxysilane  
block copolymer coating **silica** film manuf
- IT Silanes  
RL: RCT (Reactant); RACT (Reactant or reagent)  
(alkoxy; alkoxysilane- and block copolymer-containing coating **compn**  
. for manufacture of porous insulating **silica** film in wiring  
structure in semiconductor device)
- IT Dielectric films  
Semiconductor devices  
Sol-gel processing  
(alkoxysilane- and block copolymer-containing coating **composition** for  
manufacture of porous insulating **silica** film in wiring structure  
in semiconductor device)
- IT Polyoxyalkylenes, processes  
RL: CPS (Chemical process); NUU (Other use, unclassified); PEP (Physical,  
engineering or chemical process); PROC (Process); USES (Uses)  
(block; alkoxysilane- and block copolymer-containing coating **compn**  
. for manufacture of porous insulating **silica** film in wiring  
structure in semiconductor device)
- IT Porous materials  
(films; alkoxysilane- and block copolymer-containing coating **compn**  
. for manufacture of porous insulating **silica** film in wiring  
structure in semiconductor device)
- IT Films  
(porous; alkoxysilane- and block copolymer-containing coating **compn**  
. for manufacture of porous insulating **silica** film in wiring  
structure in semiconductor device)
- IT Polysiloxanes, preparation  
RL: IMF (Industrial manufacture); RCT (Reactant); PREP (Preparation); RACT  
(Reactant or reagent)  
(silicate-, **silica** precursor; alkoxysilane- and block  
copolymer-containing coating **composition** for manufacture of porous  
insulating **silica** film in wiring structure in semiconductor  
device)
- IT 106392-12-5, Polyethylene glycol-polypropylene glycol block  
copolymer  
RL: CPS (Chemical process); NUU (Other use, unclassified); PEP (Physical,  
engineering or chemical process); PROC (Process); USES (Uses)  
(alkoxysilane- and block copolymer-containing coating **composition** for  
manufacture of porous insulating **silica** film in wiring structure  
in semiconductor device)
- IT 7631-86-9P, Silica, uses  
RL: DEV (Device component use); IMF (Industrial manufacture); TEM  
(Technical or engineered material use); PREP (Preparation); USES (Uses)  
(alkoxysilane- and block copolymer-containing coating **composition** for  
manufacture of porous insulating **silica** film in wiring structure  
in semiconductor device)



IT 88029-68-9P, Dimethyldiethoxysilane-tetraethoxysilane copolymer  
RL: IMF (Industrial manufacture); RCT (Reactant); PREP (Preparation); RACT  
(Reactant or reagent)  
(silica precursor; alkoxy silane- and block copolymer-containing  
coating **composition** for manufacture of porous insulating silica  
film in wiring structure in semiconductor device)

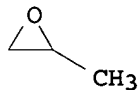
IT 78-10-4, Tetraethoxysilane 1825-62-3, Trimethylethoxysilane  
RL: RCT (Reactant); RACT (Reactant or reagent)  
(silica precursor; alkoxy silane- and block copolymer-containing  
coating **composition** for manufacture of porous insulating silica  
film in wiring structure in semiconductor device)

IT 106392-12-5, Polyethylene glycol-polypropylene glycol block  
copolymer  
RL: CPS (Chemical process); NUU (Other use, unclassified); PEP (Physical,  
engineering or chemical process); PROC (Process); USES (Uses)  
(alkoxy silane- and block copolymer-containing coating **composition** for  
manufacture of porous insulating silica film in wiring structure  
in semiconductor device)

RN 106392-12-5 HCAPLUS  
CN Oxirane, methyl-, polymer with oxirane, block (9CI) (CA INDEX NAME)

CM 1

CRN 75-56-9  
CMF C3 H6 O



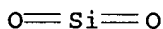
CM 2

CRN 75-21-8  
CMF C2 H4 O



IT 7631-86-9P, Silica, uses  
RL: DEV (Device component use); IMF (Industrial manufacture); TEM  
(Technical or engineered material use); PREP (Preparation); USES (Uses)  
(alkoxy silane- and block copolymer-containing coating **composition** for  
manufacture of porous insulating silica film in wiring structure  
in semiconductor device)

RN 7631-86-9 HCAPLUS  
CN Silica (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)



L39 ANSWER 19 OF 34 HCAPLUS COPYRIGHT 2005 ACS on STN  
AN 2002:570697 HCAPLUS  
DN 137:133148

ED Entered STN: 01 Aug 2002  
 TI Reduction of surface roughness during chemical mechanical planarization ( **CMP**) in electronic device fabrication  
 IN Kramer, Stephen J.; Meikle, Scott G.  
 PA Micron Technology, Inc., USA  
 SO U.S., 14 pp., Cont.-in-part of U.S. Ser. No. 252,022.  
 CODEN: USXXAM  
 DT Patent  
 LA English  
 IC ICM H01L021-00  
 INCL 438692000  
 CC 76-3 (Electric Phenomena)  
 Section cross-reference(s): 66

FAN.CNT 2

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 6426295	B1	20020730	US 2000-584468	20000531
	US 6409936	B1	20020625	US 1999-252022	19990216
	US 2002182868	A1	20021205	US 2002-209035	20020730
	US 6630403	B2	20031007		
PRAI	US 1999-252022	A2	19990216		
	US 2000-584468	A1	20000531		

CLASS

PATENT NO.	CLASS	PATENT FAMILY CLASSIFICATION CODES
US 6426295	ICM	H01L021-00
	INCL	438692000
US 6426295	NCL	438/692.000; 216/038.000; 216/088.000; 216/089.000; 252/079.100; 438/693.000; 438/745.000
	ECLA	B24B037/04I; B24B057/02; C09G001/02
US 6409936	NCL	252/079.100; 216/088.000; 216/089.000; 216/090.000; 216/091.000; 216/092.000; 252/079.200; 252/079.300; 252/079.400; 252/079.500; 252/363.500; 438/690.000; 438/691.000; 438/692.000; 438/693.000; 451/285.000; 451/286.000; 451/287.000; 451/288.000
	ECLA	B24B037/04I; B24B057/02; C09G001/02
US 2002182868	NCL	438/692.000
	ECLA	B24B037/04I; B24B057/02; C09G001/02

AB Improved methods, **compsns.** and structures formed therefrom are provided that allow for reduction of roughness in layers (e.g., oxide layers) of a planarized wafer. In one such embodiment, improved methods, **compsns.** and structures formed therefrom for reduction of roughness in layers (e.g., oxide layers) of a planarized wafer were used in conjunction with high modulus polyurethane pads. In one embodiment, improved methods, **compsns.** and structures formed therefrom are provided that reduce rough interlayer dielec. (ILD) conditions for a wafer during **CMP** processing of such a wafer. Accordingly, this reduction of rough ILD reduces chatter scratches which are scratches that emanate from regions of a wafer that has undergone **CMP** processing. Advantageously, reduction in chatter scratching reduces cracking (i.e., wormholing) in layers of the wafer that were planarized. Therefore, reduction in cracking decreases access of cleaning chemistries to underlying structures of the wafer during subsequent chemical cleaning of the planarized wafer, thereby reducing damage to such underlying structures from these cleaning chemistries (e.g., reduction of metal voids in underlying metal structures). Embodiments of a method for forming a microelectronic substrate include mixing a surfactant at least 100 ppm to slurries to form a **polishing** solution. The method also includes chemical-mech. planarizing of the semiconductor wafer using the **polishing** solution. Addnl., embodiments of a **polishing** solution for chemical-mech. planarizing a microelectronic

substrate includes slurries and a surfactant at least 100 ppm to the slurries.

ST chem mech polishing slurry  
surfactant electronic device fabrication

IT Polishing  
(chemical-mech.; reduction of surface roughness during chemical mech. planarization (CMP) in electronic device fabrication)

IT Surfactants  
(nonionic; reduction of surface roughness during chemical mech. planarization (CMP) in electronic device fabrication)

IT Polymers, uses  
Polyurethanes, uses  
RL: TEM (Technical or engineered material use); USES (Uses)  
(polishing pads; reduction of surface roughness during chemical mech. planarization (CMP) in electronic device fabrication)

IT Crack (fracture)  
Dielectric films  
Slurries  
Surface roughness  
Surfactants  
(reduction of surface roughness during chemical mech. planarization (CMP) in electronic device fabrication)

IT 7631-86-9, Silica, uses 9002-92-0, Polyoxyethylene lauryl ether 9004-95-9, Polyoxyethylene cetyl ether 9004-98-2, Polyoxyethylene oleyl ether 9005-00-9, Polyoxyethylene stearyl ether  
RL: NUU (Other use, unclassified); USES (Uses)  
(reduction of surface roughness during chemical mech. planarization (CMP) in electronic device fabrication)

RE.CNT 16 THERE ARE 16 CITED REFERENCES AVAILABLE FOR THIS RECORD

RE

- (1) Anon; McGraw-Hill Concise Encyclopedia of Science & Technology, Fourth Edition 1998, P1931
- (2) Blackwell; US 5320706 A 1994
- (3) Cook; US 5489233 A 1996
- (4) Griesshammer; US 4070797 A 1978
- (5) Griesshammer; US 4156619 A 1979
- (6) Grover; US 5759917 A 1998 HCAPLUS
- (7) Hiemenz, P; Principles of Colloid and Surface Chemistry, 2nd ed 1986, P428
- (8) Hosali; US 5738800 A 1998
- (9) Huynh; US 5704987 A 1998
- (10) Isobe; US 5616212 A 1997 HCAPLUS
- (11) Lyons; US 5930645 A 1999 HCAPLUS
- (12) Olmstead; US 5193316 A 1993
- (13) Shamouillan; US 5584146 A 1996
- (14) Sherman; US 4724042 A 1988 HCAPLUS
- (15) Sova; US 4563257 A 1986 HCAPLUS
- (16) Wang; US 6046112 A 2000 HCAPLUS

IT 7631-86-9, Silica, uses  
RL: NUU (Other use, unclassified); USES (Uses)  
(reduction of surface roughness during chemical mech. planarization (CMP) in electronic device fabrication)

RN 7631-86-9 HCAPLUS

CN Silica (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)

O=Si=O

L39 ANSWER 20 OF 34 HCAPLUS COPYRIGHT 2005 ACS on STN  
 AN 2002:397875 HCAPLUS  
 DN 136:394390  
 ED Entered STN: 28 May 2002  
 TI Chemical mechanical **polishing slurries** with balanced  
 high **polishing** speed and low erosion, and manufacture of  
 semiconductor devices using them in damascene process  
 IN Nanpuku, Manabu; Yano, Hiroyuki  
 PA Toshiba Corp., Japan  
 SO Jpn. Kokai Tokkyo Koho, 7 pp.  
 CODEN: JKXXAF  
 DT Patent  
 LA Japanese  
 IC ICM C09K003-14  
 ICS C09K003-14; B24B037-00; H01L021-304; H01L021-306  
 CC 76-3 (Electric Phenomena)

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 2002155268	A2	20020528	JP 2000-352451	20001120
PRAI	JP 2000-352451		20001120		

CLASS

PATENT NO.	CLASS	PATENT FAMILY CLASSIFICATION CODES
JP 2002155268	ICM	C09K003-14
	ICS	C09K003-14; B24B037-00; H01L021-304; H01L021-306

AB The **slurry** comprises a solvent, **abrasives**, a 1st  
**surfactant**, and a 2nd **surfactant**. The  
**surfactants** are preferably **nonionic** or those with the  
 same polarity as each other, and the **abrasives** are preferably  
 nonionic or those with the same polarity as the **surfactants**.  
 ST chem mech **polishing slurry** semiconductor damascene;  
**abrasive slurry** surfactant **CMP** reduced erosion  
 IT Complexing agents  
 Oxidizing agents  
 Semiconductor device fabrication  
 Surfactants  
 (**CMP slurry** with balanced high **polishing**  
 speed and low erosion for damascene processes in semiconductor device  
 fabrication)  
 IT **Polishing** materials  
 (**abrasive** pastes; **CMP slurry** with  
 balanced high **polishing** speed and low erosion for damascene  
 processes in semiconductor device fabrication)  
 IT Polyoxyalkylenes, uses  
 RL: NUU (Other use, unclassified); USES (Uses)  
 (alkyl allyl ethers, alkyl **amines**, surfactant; **CMP**  
**slurry** with balanced high **polishing** speed and low  
 erosion for damascene processes in semiconductor device fabrication)  
 IT Sulfates, uses  
 RL: NUU (Other use, unclassified); USES (Uses)  
 (alkyl derivs., surfactant; **CMP slurry** with  
 balanced high **polishing** speed and low erosion for damascene  
 processes in semiconductor device fabrication)  
 IT Quaternary ammonium compounds, uses  
 RL: NUU (Other use, unclassified); USES (Uses)  
 (alkyltrimethyl, surfactant; **CMP slurry** with  
 balanced high **polishing** speed and low erosion for damascene  
 processes in semiconductor device fabrication)  
 IT **Polishing**

(chemical-mech.; **CMP slurry** with balanced high **polishing** speed and low erosion for damascece processes in semiconductor device fabrication)

IT **Abrasives**

(**polishing** pastes; **CMP slurry** with balanced high **polishing** speed and low erosion for damascece processes in semiconductor device fabrication)

IT **Amines, uses**

RL: NUU (Other use, unclassified); USES (Uses)  
(salts, alkyl derivs., surfactant; **CMP slurry** with balanced high **polishing** speed and low erosion for damascece processes in semiconductor device fabrication)

IT **Fatty acids, uses**

RL: NUU (Other use, unclassified); USES (Uses)  
(salts, surfactant; **CMP slurry** with balanced high **polishing** speed and low erosion for damascece processes in semiconductor device fabrication)

IT **Carbohydrates, uses**

RL: NUU (Other use, unclassified); USES (Uses)  
(sugar esters, surfactant; **CMP slurry** with balanced high **polishing** speed and low erosion for damascece processes in semiconductor device fabrication)

## IT 56-40-6, Glycine, uses 56-41-7, Alanine, uses 59-67-6, Nicotinic acid, uses 73-22-3, Tryptophane, uses 98-98-6, Picolinic acid 110-15-6, Succinic acid, uses 141-82-2, Malonic acid, uses 144-62-7, Oxalic acid, uses

RL: NUU (Other use, unclassified); USES (Uses)  
(additive; **CMP slurry** with balanced high **polishing** speed and low erosion for damascece processes in semiconductor device fabrication)

## IT 14265-44-2, Phosphate, uses

RL: NUU (Other use, unclassified); USES (Uses)  
(alkyl derivs., surfactant; **CMP slurry** with balanced high **polishing** speed and low erosion for damascece processes in semiconductor device fabrication)

## IT 89-00-9, Quinolinic acid 93-10-7, Quinaldic acid

RL: NUU (Other use, unclassified); USES (Uses)  
(complexing agent; **CMP slurry** with balanced high **polishing** speed and low erosion for damascece processes in semiconductor device fabrication)

## IT 7722-84-1, Hydrogen peroxide, uses 7727-21-1, Potassium persulfate 7727-54-0, Ammonium persulfate 10421-48-4, Ferric nitrate 15078-94-1, Ammonium cerium nitrate

RL: NUU (Other use, unclassified); USES (Uses)  
(oxidant; **CMP slurry** with balanced high **polishing** speed and low erosion for damascece processes in semiconductor device fabrication)

## IT 56-81-5D, Glycerin, esters 1331-61-9, Dodecylbenzenesulfonic acid ammonium salt 1875-92-9D, Dimethylbenzyl ammonium chloride, alkyl derivs. 9002-92-0, Poly(oxyethylene) lauryl ether 12441-09-7D, Sorbitan, esters 25322-68-3D, alkyl allyl ethers, alkyl amines 27177-77-1, Dodecylbenzenesulfonic acid potassium salt 94653-96-0D, Naphthalenesulfonic acid potassium salt, alkyl derivs.

RL: NUU (Other use, unclassified); USES (Uses)  
(surfactant; **CMP slurry** with balanced high **polishing** speed and low erosion for damascece processes in semiconductor device fabrication)

DNC C2002-046084

TI **Chemical mechanical polishing slurry composition** for polishing substrate comprises **abrasive** and oxidizing agent.

DC G04 P61

IN MAHULIKAR, D; PASQUALONI, A M

PA (ARCH-N) ARCH SPECIALTY CHEM INC; (PLAN-N) PLANAR SOLUTIONS LLC

CYC 25

PI WO 2002004573 A2 20020117 (200219)\* EN 18 C09K000-00  
 RW: AT BE CH CY DE DK ES FI FR GB GR IE IT LU MC NL PT SE TR  
 W: JP KR SG

US 6468913 B1 20021022 (200273) H01L021-00

EP 1354017 A2 20031022 (200370) EN C09K003-00

R: AT BE CH CY DE DK ES FI FR GB GR IE IT LI LU MC NL PT SE TR

KR 2003059070 A 20030707 (200377) C09K003-14

JP 2004502860 W 20040129 (200413) 32 C09K003-14

TW 574347 A 20040201 (200453) C09K013-00

ADT WO 2002004573 A2 WO 2001-US10491 20010402; US 6468913 B1 US 2000-611702  
 20000708; EP 1354017 A2 EP 2001-922992 20010402, WO 2001-US10491 20010402;  
 KR 2003059070 A KR 2003-700216 20030107; JP 2004502860 W WO 2001-US10491  
 20010402, JP 2002-509430 20010402; TW 574347 A TW 2001-113232 20010531

FDT EP 1354017 A2 Based on WO 2002004573; JP 2004502860 W Based on WO  
 2002004573

PRAI US 2000-611702 20000708

IC ICM C09K000-00; C09K003-00; C09K003-14; C09K013-00; H01L021-00

ICS B24B037-00; C09G001-00; H01L021-304

AB WO 200204573 A UPAB: 20040920

NOVELTY - **Chemical mechanical polishing slurry composition** comprises an **abrasive**

including **silica**, alumina, ceria, or their mixtures; and an oxidizing agent. The **slurry** has an effective shelf life of at least 30 days.

DETAILED DESCRIPTION - **Chemical mechanical polishing slurry composition** comprises an **abrasive** including **silica**, alumina, ceria, or their mixtures; and an oxidizing agent including hydrogen peroxide, potassium ferricyanide, potassium dichromate, potassium iodate, potassium bromate, vanadium trioxide, hypochlorous acid, sodium hypochlorite, potassium hypochlorite, calcium hypochlorite, magnesium hypochlorite, ferric nitrate, ammonium persulfate, potassium permanganate, or their mixtures. The **slurry** has an effective shelf life of at least 30 days. INDEPENDENT CLAIMS are also included for (A) a method of **polishing** a substrate, which comprises providing a substrate with at least one metal layer, applying the inventive **slurry composition**, and **chemically mechanically polishing** the substrate with the **slurry**; and (B) a method of preparing a **chemical mechanical polishing slurry**, which comprises mixing an **abrasive** with an oxidizer, and storing the **slurry** prior to use.

USE - The **slurry composition** is used for **chemical mechanical polishing** of metal substrates on semiconductor wafers.

ADVANTAGE - The inventive **slurry composition** is ready-to-use and stable over long term storage at ambient conditions. Its use in a **chemical mechanical polishing** process promotes high removal rates, low defect densities, and reduced amounts of dishing and erosion.

Dwg.0/0

FS CPI GMPI

FA AB

MC CPI: G04-B04

L39 ANSWER 22 OF 34 WPIX COPYRIGHT 2005 THE THOMSON CORP on STN

AN 2003-185553 [19] WPIX

DNN N2003-146128 DNC C2003-049112

TI **Chemical/mechanical polishing slurry**

, used in producing shallow trench insulation in silicon wafer with oxide and nitride coatings, comprises **abrasive** particles in aqueous solution containing two different passivating agents.

DC A85 E19 G02 L02 L03 P61 U11

IN HAH, S; LEE, J; YOON, B; HA, S R; LEE, J D; LEE, J W; YOON, B E

PA (SMSU) SAMSUNG ELECTRONICS CO LTD; (HAHS-I) HAH S; (LEEJ-I) LEE J;  
(YOON-I) YOON B

CYC 6

PI	DE 10160174	A1	20021017	(200319)*	16	C09G001-02
	JP 2002313760	A	20021025	(200319)	11	H01L021-304
	KR 2002077636	A	20021012	(200319)		H01L021-304
	US 2003022499	A1	20030130	(200319)		H01L021-302
	US 6540935	B2	20030401	(200324)		C09K013-00
	US 2003148616	A1	20030807	(200358)		C03C025-68
	SG 102648	A1	20040326	(200427)		C09K013-00
	TW 573001	A	20040121	(200453)		C09K003-14
	KR 459696	B	20041203	(200525)		H01L021-304
	US 6914001	B2	20050705	(200544)		H01L021-302

ADT DE 10160174 A1 DE 2001-10160174 20011207; JP 2002313760 A JP 2001-392645 20011225; KR 2002077636 A KR 2001-25873 20010511; US 2003022499 A1 US 2001-826169 20010405; US 6540935 B2 US 2001-826169 20010405; US 2003148616 A1 Div ex US 2001-826169 20010405, US 2003-351539 20030127; SG 102648 A1 SG 2001-7788 20011212; TW 573001 A TW 2001-129490 20011129; KR 459696 B KR 2001-25873 20010511; US 6914001 B2 Div ex US 2001-826169 20010405, US 2003-351539 20030127

FDT US 2003148616 A1 Div ex US 6540935; KR 459696 B Previous Publ. KR 2002077636; US 6914001 B2 Div ex US 6540935

PRAI US 2001-826169 20010405; US 2003-351539 20030127

IC ICM C03C025-68; C09G001-02; C09K003-14; C09K013-00; H01L021-302;  
H01L021-304

ICS B24B037-00; B24B057-02; H01L021-461

AB DE 10160174 A UPAB: 20030320

**NOVELTY - Chemical/mechanical polishing**

**slurry** comprises an aqueous solution containing **abrasive** particles and 2 different passivating agents.

USE - The **slurry** is used in rotary **chemical/mechanical polishing (CMP)** with a

**polishing** pad; and in shallow trench insulation, comprising coating a semiconductor substrate with cushion oxide and silicon nitride (SiN), making trenches through these layers into the substrate, forming an insulating oxide film over the trenches and removing the SiN layer and this film down to the plane of the SiN layer by **CMP** (all claimed). The **CMP** is used in making microelectronic devices.

ADVANTAGE - The oxide/silicon nitride selectivity of the aqueous solution is not less than 50:1 (claimed), which is better than usual.

DESCRIPTION OF DRAWING(S) - The drawing shows the **chemical/mechanical polishing (CMP)** stage of the process flow diagram. (Drawing includes non-English language text).

Contact surface of wafer with **polishing** pad 802

Supply **CMP slurry** containing **abrasive** and the first and second passivating agents 803

Rotate surface of wafer relative to surface of **polishing** pad to remove oxide coating 804

Dwg.8/9

FS CPI EPI GMPI  
FA AB; GI; DCN  
MC CPI: A11-B05; A12-E04; A12-E07C; E05-A; E05-G09C; E10-A09B4; E10-A09B5;  
E10-A22; E10-C02F; E10-C04; E31-K05D; E31-K05E; E31-P03; E31-P06D;  
E34-C02; E34-E; E35-G; E35-K02; E35-L; G02-A05B; L02-F; L04-C27  
EPI: U11-A10; U11-C06A1A

L39 ANSWER 23 OF 34 HCAPLUS COPYRIGHT 2005 ACS on STN  
AN 2001:338649 HCAPLUS  
DN 134:341709  
ED Entered STN: 11 May 2001  
TI Organic additives for chemical-mechanical **polishing slurries** for Ta barrier layers in integrated circuits  
IN Sahota, Kashmir S.; Schonauer, Diana M.; Avanzino, Steven C.  
PA Advanced Micro Devices, Inc., USA  
SO PCT Int. Appl., 38 pp.  
CODEN: PIXXD2  
DT Patent  
LA English  
IC ICM C09G001-02  
CC 42-13 (Coatings, Inks, and Related Products)  
Section cross-reference(s): 76

FAN.CNT 3

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2001032794	A1	20010510	WO 2000-US30354	20001103
W: CN, JP, KR, SG				
RW: AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR				
US 2002005504	A1	20020117	US 1999-434146	19991104
US 6503418	B2	20030107		
EP 1246879	A1	20021009	EP 2000-976902	20001103
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, FI, CY, TR				
JP 2003514374	T2	20030415	JP 2001-535479	20001103
PRAI US 1999-434146	A	19991104		
WO 2000-US30354	W	20001103		

CLASS

PATENT NO.	CLASS	PATENT FAMILY CLASSIFICATION CODES
WO 2001032794	ICM	C09G001-02
WO 2001032794	ECLA	C09G001/02; C09K003/14D2
US 2002005504	NCL	252/079.100
	ECLA	C09G001/02; C09K003/14D2

AB A Ta barrier **slurry** for Chemical-Mech. **Polishing** (CMP) during copper metalization contains an organic additive which suppresses formation of ppts. and copper staining. The organic additive is chosen from a class of compds. which form multiple strong adsorbent bonds to the surface of silica or copper, which provide a high degree of surface coverage onto the reactive species, thereby occupying potential reaction sites, and which are sized to sterically hinder the collisions between two reactant mols. which result in new bond formation.

ST org additive **polishing slurry** integrated circuit

IT **Surfactants**  
(nonionic; organic additives for chemical-mech. **polishing slurries** for Ta barrier layers in integrated circuits)

IT **Abrasives**  
Corrosion inhibitors  
Integrated circuits  
**Polishing materials**



(organic additives for chemical-mech. **polishing slurries**  
for Ta barrier layers in integrated circuits)

IT **Amines**, uses  
Polyoxyalkylenes, uses  
RL: MOA (Modifier or additive use); USES (Uses)  
(organic additives for chemical-mech. **polishing slurries**  
for Ta barrier layers in integrated circuits)

IT 7631-86-9, Silica, uses  
RL: TEM (Technical or engineered material use); USES (Uses)  
(**abrasive**; organic additives for chemical-mech. **polishing slurries** for Ta barrier layers in integrated circuits)

IT 50-70-4, Sorbitol, uses 56-81-5, Glycerol, uses 107-21-1, Ethylene glycol, uses 111-46-6, Di(ethylene glycol), uses 9002-89-5, Polyvinyl alcohol 9002-92-0, Polyoxyethylene lauryl ether 9003-05-8, Polyacrylamide 9004-95-9, Polyoxyethylene cetyl ether 9016-45-9, Nonylphenol polyethylene oxide 9063-89-2, Poly(ethylene oxide) octylphenol ether 25067-34-9, Ethylene-vinyl alcohol copolymer 25213-24-5, Vinyl alcohol-vinyl acetate copolymer 25322-68-3, Poly(ethylene glycol) 25791-96-2 31694-55-0, Polyethylene glycol glycerol ether 156048-32-7, Dimethylsilanediol-ethylene oxide co-polymer  
RL: MOA (Modifier or additive use); USES (Uses)  
(organic additives for chemical-mech. **polishing slurries**  
for Ta barrier layers in integrated circuits)

RE.CNT 2 THERE ARE 2 CITED REFERENCES AVAILABLE FOR THIS RECORD

RE  
(1) Gomez, J; US 5897375 A 1999  
(2) Higuchi, M; US 5770095 A 1998 HCAPLUS

L39 ANSWER 24 OF 34 HCAPLUS COPYRIGHT 2005 ACS on STN

AN 2001:469560 HCAPLUS

DN 135:63058

ED Entered STN: 29 Jun 2001

TI Cleaning **compositions** for **chemical mechanical polishing slurry** of semiconductors

IN Yamana, Masahide; Shudo, Shinsei

PA Advantech K. K., Japan

SO Jpn. Kokai Tokkyo Koho, 5 pp.

CODEN: JKXXAF

DT Patent

LA Japanese

IC ICM H01L021-304

ICS B24B037-00; C11D001-00; C11D003-14

CC 46-6 (Surface Active Agents and Detergents)

Section cross-reference(s): 76

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 2001176825	A2	20010629	JP 1999-356160	19991215
PRAI	JP 1999-356160		19991215		

CLASS

PATENT NO.	CLASS	PATENT FAMILY CLASSIFICATION CODES
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JP 2001176825	ICM	H01L021-304
	ICS	B24B037-00; C11D001-00; C11D003-14

AB The title **compns.** contain 1-70% **abrasive** particles free from alkali metal ions (e.g., silica with average diameter 25 µm) and 1-50% **nonionic surfactants** (e.g., polyoxyethylene monooleate, polyoxyethylene propylene glycol, polyoxyethylene monostearate) as aqueous emulsions.

ST semiconductor chem mech polishing

slurry cleaning compn; silica abrasive  
 particle semiconductor polishing slurry cleaning;  
 nonionic surfactant semiconductor polishing  
 slurry cleaning  
 IT Emulsions  
 Scouring agents  
 Semiconductor materials  
 (cleaning compns. for chemical mech.  
 polishing slurry of semiconductors)  
 IT Surfactants  
 (nonionic; cleaning compns. for chemical  
 mech. polishing slurry of semiconductors)  
 IT Polishing  
 (of semiconductors; cleaning compns. for chemical  
 mech. polishing slurry of semiconductors)  
 IT Abrasives  
 (particles; cleaning compns. for chemical mech  
 . polishing slurry of semiconductors)  
 IT 7631-86-9, Silica, uses  
 RL: TEM (Technical or engineered material use); USES (Uses)  
 (abrasive particles; cleaning compns. for  
 chemical mech. polishing slurry of  
 semiconductors)  
 IT 9003-11-6, Polyoxyethylene propylene glycol ether 9004-96-0,  
 Polyoxyethylene monooleate 9004-99-3, Polyoxyethylene monostearate  
 RL: TEM (Technical or engineered material use); USES (Uses)  
 (nonionic surfactants; cleaning compns.  
 for chemical mech. polishing slurry  
 of semiconductors)  
 IT 7631-86-9, Silica, uses  
 RL: TEM (Technical or engineered material use); USES (Uses)  
 (abrasive particles; cleaning compns. for  
 chemical mech. polishing slurry of  
 semiconductors)  
 RN 7631-86-9 HCAPLUS  
 CN Silica (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)

O=Si=O

L39 ANSWER 25 OF 34 HCAPLUS COPYRIGHT 2005 ACS on STN

AN 2001:557817 HCAPLUS

DN 135:115843

ED Entered STN: 03 Aug 2001

TI Polishing compositions for magnetic disks

IN Shemo, David M.; Rader, W. Scott; Owaki, Toshiki

PA Fujimi America Inc., USA

SO Brit. UK Pat. Appl., 36 pp.

CODEN: BAXXDU

DT Patent

LA English

IC ICM C09G001-02

CC 77-8 (Magnetic Phenomena)

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
	-----		-----	-----	-----
PI	GB 2354525	A1	20010328	GB 2000-23101	20000920
	GB 2354525	B2	20031022		

US 6258140	B1	20010710	US 1999-404993	19990927
CN 1289811	A	20010404	CN 2000-131713	20000927
CN 1134521	B	20040114		
JP 2001155332	A2	20010608	JP 2000-294874	20000927
PRAI US 1999-404993	A	19990927		

## CLASS

PATENT NO.	CLASS	PATENT FAMILY CLASSIFICATION CODES
GB 2354525	ICM	C09G001-02
GB 2354525	ECLA	C09G001/02; C09K003/14D2; G11B005/84B
US 6258140	NCL	051/308.000; 106/003.000; 510/165.000; 510/167.000
	ECLA	C09G001/02; C09K003/14D2; G11B005/84B
AB	<p><b>A polishing composition for polishing</b> a memory hard disk having a high stock removal rate and capable of providing a <b>polished</b> surface having a small surface roughness and preventing formation of microprotrusions, micropits or other surface defects, comprises the following components: (a) 0.1-50 wt% in the total amount of the <b>polishing composition</b>, of <math>\geq 1</math> <b>abrasive</b> particles selected from silicon dioxide, aluminum oxide, cerium oxide, zirconium oxide, titanium oxide, silicon nitride and manganese dioxide; (b) 0.0001-3.0 wt% of <math>\geq 1</math> <b>polishing</b> resistance-reducing agent selected from a surfactant, a water-soluble polymer and a polyelectrolyte, (c) 0.001-40 wt% of <math>\geq 1</math> <b>polishing</b> accelerator selected from an inorg. acid, an organic acid and their aluminum, iron, nickel and cobalt salts (such as aluminum nitrate, ascorbic acid, sulfuric acid), and (d) water.</p>	
ST	<p>magnetic disk <b>polishing compn</b>; silicon dioxide <b>abrasive polishing</b>; <b>polishing</b> resistance reducing agent; accelerator <b>polishing</b></p>	
IT	<p>Salts, uses            RL: TEM (Technical or engineered material use); USES (Uses)            (Al, Fe, Ni, Co; <b>polishing compns.</b> for magnetic disks)</p>	
IT	<p>Acrylic polymers, uses            RL: TEM (Technical or engineered material use); USES (Uses)            (ammonium salt; <b>polishing compns.</b> for magnetic disks)</p>	
IT	<p>Surfactants            (anionic; <b>polishing compns.</b> for magnetic disks)</p>	
IT	<p>Surfactants            (cationic; <b>polishing compns.</b> for magnetic disks)</p>	
IT	<p><b>Amines</b>, uses            RL: TEM (Technical or engineered material use); USES (Uses)            (coco alkyl, ethoxylated, quaternary ammonium chloride; <b>polishing compns.</b> for magnetic disks)</p>	
IT	<p><b>Amines</b>, uses            RL: TEM (Technical or engineered material use); USES (Uses)            (ethoxylated, quaternary ammonium salt; <b>polishing compns.</b> for magnetic disks)</p>	
IT	<p><b>Surfactants</b>            (nonionic; <b>polishing compns.</b> for magnetic disks)</p>	
IT	<p>Sulfonic acids, uses            RL: TEM (Technical or engineered material use); USES (Uses)            (<b>polishing</b> accelerator; <b>polishing compns.</b> for magnetic disks)</p>	
IT	<p><b>Abrasives</b>            Magnetic disks  <b>Polishing</b>  <b>Polishing materials</b></p>	

## Polyelectrolytes

## Slurries

(polishing compns. for magnetic disks)

- IT Polyoxyalkylenes, uses  
RL: TEM (Technical or engineered material use); USES (Uses)  
(polishing compns. for magnetic disks)
- IT Amines, uses  
RL: TEM (Technical or engineered material use); USES (Uses)  
(tallow alkyl, ethoxylated; polishing compns. for magnetic disks)
- IT 7631-86-9, Colloidal silica, uses  
RL: TEM (Technical or engineered material use); USES (Uses)  
(colloidal; polishing compns. for magnetic disks)
- IT 50-21-5, Lactic acid, uses 50-81-7, Ascorbic acid, uses 56-40-6, Glycine, uses 56-86-0, Glutamic acid, uses 77-92-9, Citric acid, uses 79-14-1, Glycolic acid, uses 87-69-4, Tartaric acid, uses 90-64-2, Mandelic acid 110-15-6, Succinic acid, uses 141-82-2, Malonic acid, uses 473-81-4, Glyceric acid 526-95-4, Gluconic acid 547-67-1, Nickel oxalate 814-87-9, Aluminum oxalate 2338-05-8, Iron citrate 6915-15-7, Malic acid 7050-19-3, Ammonium iron citrate 7446-70-0, Aluminum chloride, uses 7601-90-3, Perchloric acid, uses 7646-79-9, Cobalt chloride, uses 7647-01-0, Hydrochloric acid, uses 7664-38-2, Phosphoric acid, uses 7664-93-9, Sulfuric acid, uses 7697-37-2, Nitric acid, uses 7705-08-0, Iron chloride, uses 7718-54-9, Nickel chloride, uses 7784-25-0, Ammonium aluminum sulfate 7786-81-4, Nickel sulfate 10043-01-3, Aluminum sulfate 10043-35-3, Boric acid, uses 10045-89-3, Ammonium iron sulfate 10124-43-3, Cobalt sulfate 10124-49-9, Iron sulfate 10141-05-6, Cobalt nitrate 13138-45-9, Nickel nitrate 13473-90-0, Aluminum nitrate 13637-71-3, Nickel perchlorate 14013-86-6, Iron nitrate 14452-39-2, Aluminumperchlorate 19297-92-8, Ammonium iron oxalate 22605-92-1, Nickel citrate 31142-56-0, Aluminum citrate 38023-20-0, Iron hydroxide perchlorate (Fe(OH)(ClO4)2) 49599-05-5, Ammonium aluminum citrate  
RL: TEM (Technical or engineered material use); USES (Uses)  
(polishing accelerator; polishing compns. for magnetic disks)
- IT 60-00-4D, Ethylenediaminetetraacetic acid, Fe, Ni, Co complex, uses 67-42-5D, Fe, Ni, Co complex 67-43-6D, Diethylenetriaminepentaacetic acid, Fe, Ni, Co complex 93-62-9D, Fe, Ni, Co complex 139-13-9D, Nitrilotriacetic acid, Fe, Ni, Co complex 150-25-4D, Dihydroxyethyl glycine, Fe, Ni, Co complex 150-39-0D, Hydroxyethylethylenediaminetriacetic acid, Fe, Ni, Co complex 869-52-3D, Fe, Ni, Co complex 1306-38-3, Cerium oxide, uses 1313-13-9, Manganese dioxide, uses 1314-23-4, Zirconium oxide, uses 1344-28-1, Aluminum oxide, uses 4408-81-5D, Propylenediaminetetraacetic acid, Fe, Ni, Co complex 9002-89-5, Polyvinyl alcohol 9003-01-4, Polyacrylic acid 12033-89-5, Silicon nitride, uses 13463-67-7, Titanium oxide, uses 25322-68-3, Polyethylene oxide 162362-34-7  
RL: TEM (Technical or engineered material use); USES (Uses)  
(polishing compns. for magnetic disks)
- L39 ANSWER 26 OF 34 WPIX COPYRIGHT 2005 THE THOMSON CORP on STN  
AN 2001-168335 [17] WPIX  
DNN N2001-121419 DNC C2001-050197  
TI **Chemical-mechanical polishing slurry**  
used in semiconductor device planarization has particles uniformly dispersed in an aqueous medium with specified surface area, an aggregate size distribution and an aggregate diameter.
- DC A25 A26 A85 L03 M14 P61 U11  
IN BURKE, P A; LACK, C D; LUO, Q; SACHAN, V; THOMAS, T M; YE, Q C; YE, Q

PA (RODE-N) RODEL HOLDINGS INC

CYC 31

PI WO 2001002134 A1 20010111 (200117)\* EN 33 B24B001-00

RW: AT BE CH CY DE DK ES FI FR GB GR IE IT LU MC NL PT SE

W: CN JP KR SG

EP 1177068 A1 20020206 (200218) EN B24B001-00

R: AL AT BE CH CY DE DK ES FI FR GB GR IE IT LI LT LU LV MC MK NL PT

RO SE SI

TW 452523 A 20010901 (200240) B24B001-00

US 6447373 B1 20020910 (200263) B24B001-00

KR 2002035826 A 20020515 (200273) H01L021-304

JP 2003503862 W 20030128 (200309) 34 H01L021-304

ADT WO 2001002134 A1 WO 2000-US17046 20000621; EP 1177068 A1 EP 2000-943003  
 20000621, WO 2000-US17046 20000621; TW 452523 A TW 2000-112525 20000626;  
 US 6447373 B1 Provisional US 1999-142326P 19990703, US 2000-598377  
 20000621; KR 2002035826 A KR 2002-700019 20020102; JP 2003503862 W WO  
 2000-US17046 20000621, JP 2001-507608 20000621

FDT EP 1177068 A1 Based on WO 2001002134; JP 2003503862 W Based on WO  
 2001002134

PRAI US 1999-142326P 19990703; US 2000-598377 20000621

IC ICM B24B001-00; H01L021-304

ICS B24B037-00; B24D003-34; C09K003-14; C09K013-00; H01L021-00;

H01L021-44

AB WO 200102134 A UPAB: 20010328

NOVELTY - **Chemical-mechanical polishing**

**slurry** has particles uniformly dispersed in an aqueous medium with  
 a surface area of 40-430 m<sup>2</sup>/g, aggregate size distribution less than 1 mu  
 m, mean aggregate diameter less than 0.4 mu m, and contains at least one  
 ionic species which prevents a force sufficient to repel and overcome the  
 van der Waals forces between particles. The particles form stage 1  
 agglomerates greater than 1 mu m.

DETAILED DESCRIPTION - An INDEPENDENT CLAIM is also included for a  
 method of **chemical-mechanical polishing** of a  
 metal layer of a substrate by **chemical mechanical**  
**polishing** a metal layer with the inventive **slurry**  
 comprising particles dispersible in an aqueous medium. The medium has a  
 static etch rate with respect to the metal layer of less than 75 Angstrom  
 /min.

USE - The **slurry** is used in **chemical-**  
**mechanical polishing** of a metal layer of a substrate,  
 preferably in semiconductor device planarization, memory disk  
**polishing**, and optics **polishing**. It can be used in  
**polishing** dielectrics, including low k (dielectric constant)  
 dielectrics, e.g. porous silica, or organic low k dielectrics,  
 e.g. fluoro polymers or copolymers.

ADVANTAGE - The method provides an effective **polishing** to  
 metal layers at desired **polishing** rates while minimizing surface  
 imperfections and defects. The **slurries** have a low static etch  
 rate and are metastable due to reversible formation of types of  
 agglomerates. The agglomerates will not cause unacceptable  
**polishing** defects and will de-agglomerate with simple agitation.

Dwg.0/6

FS CPI EPI GMPI

FA AB

MC CPI: A12-W12C; L04-C26; M14-A

EPI: U11-C06A1A

L39 ANSWER 27 OF 34 WPIX COPYRIGHT 2005 THE THOMSON CORP on STN

AN 2001-158580 [16] WPIX

DNN N2001-115522 DNC C2001-046981

TI Manufacture of a semiconductor device on a wafer involves chemically treating the wafer by immersion in a solution and/or double sided scrubbing of the wafer with the solution.

DC L03 U11

IN AVANZINO, S C; SCHONAUER, D M; YANG, K

PA (ADMI) ADVANCED MICRO DEVICES INC

CYC 1

PI US 6177349 B1 20010123 (200116)\* 7 H01L021-44

ADT US 6177349 B1 US 1998-206169 19981207

PRAI US 1998-206169 19981207

IC ICM H01L021-44

AB US 6177349 B UPAB: 20010323

NOVELTY - A semiconductor device is manufactured on a wafer by chemically treating the wafer surface with a solution containing ammonium fluoride, diammonium hydrogen citrate, triammonium citrate, a surfactant, and water by immersing the wafer in the solution and/or double sided brush scrubbing the wafer with the solution.

DETAILED DESCRIPTION - Manufacture of a semiconductor device on a wafer involves:

(a) forming a copper (Cu) or Cu alloy interconnection pattern comprising a dense array of spaced apart Cu or Cu alloy lines bordering an open dielectric field on a surface of the wafer; and

(b) chemically treating the wafer surface with a solution containing ammonium fluoride, diammonium hydrogen citrate, triammonium citrate, a surfactant, and water by immersing the wafer in the solution and/or double sided brush scrubbing the wafer with the solution.

USE - Manufacturing high speed integrated circuits having submicron features and high aspect ratio openings such as semiconductor devices with a design rule of 0.18 microns and under.

ADVANTAGE - Enables the formation of reliable Cu and/or Cu alloy interconnection while eliminating or substantially reducing the formation and/or growth of dendritics emanating from Cu or Cu alloy lines and substantially removing residual slurry particles in an efficient, cost effective manner.

Dwg.0/1

FS CPI EPI

FA AB

MC CPI: L04-C11C; L04-C26

EPI: U11-C05E1; U11-C06A1A

L39 ANSWER 28 OF 34 HCAPLUS COPYRIGHT 2005 ACS on STN

AN 2000:291176 HCAPLUS

DN 132:302004

ED Entered STN: 05 May 2000

TI Chemical mechanical polishing slurry system having an activator solution

IN Mahulikar, Deepak

PA Arch Specialty Chemicals, Inc., USA

SO PCT Int. Appl., 21 pp.

CODEN: PIXXD2

DT Patent

LA English

IC ICM C09K003-14

ICS C09G001-02; B24B001-00

CC 76-3 (Electric Phenomena)

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
	-----	---	-----	-----	-----
PI	WO 2000024842	A1	20000504	WO 1999-US24864	19991022
	W: JP, KR, SG				

RW: AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL,  
PT, SE

EP 1124912 A1 20010822 EP 1999-955147 19991022

R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT,  
IE, FI

JP 2002528903 T2 20020903 JP 2000-578398 19991022

US 6447563 B1 20020910 US 1999-425358 19991022

PRAI US 1998-105366P P 19981023

WO 1999-US24864 W 19991022

## CLASS

PATENT NO.	CLASS	PATENT FAMILY CLASSIFICATION CODES
WO 2000024842	ICM	C09K003-14
	ICS	C09G001-02; B24B001-00
WO 2000024842	ECLA	C09G001/02; C09K003/14D2
US 6447563	NCL	051/309.000; 051/307.000; 051/308.000; 106/003.000; 252/079.200; 252/079.300; 252/079.400; 438/692.000; 438/693.000
	ECLA	C09G001/02; C09K003/14D2

AB This invention relates to a **CMP slurry** system for use in semiconductor device fabrication. The **slurry** system comprises 2 parts. The 1st part is a generic dispersion that contains only an **abrasive** and, optionally, a surfactant and a stabilizing agent. The generic dispersion can be used for **polishing** metals as well as interlayer dielects. The 2nd part is a novel activator solution comprising  $\geq 2$  components selected from: an oxidizer, acids, amines, chelating agents, F-containing compds., corrosion inhibitors, buffering agents, surfactants, biol. agents, and their mixts.

ST chem mech **polishing slurry** activator soln;  
semiconductor device fabrication **CMP slurry**

IT Quaternary ammonium compounds, processes  
RL: PEP (Physical, engineering or chemical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)  
(alkylbenzyltrimethyl, chlorides; chemical mech. **polishing slurry** system having activator solution containing)

IT Surfactants  
(amphoteric; chemical mech. **polishing slurry** system having activator solution containing)

IT Surfactants  
(anionic; chemical mech. **polishing slurry** system having activator solution containing)

IT Surfactants  
(cationic; chemical mech. **polishing slurry** system having activator solution containing)

IT **Abrasives**  
Buffers  
Chelating agents  
Corrosion inhibitors  
Oxidizing agents  
Stabilizing agents  
Surfactants  
(chemical mech. **polishing slurry** system having activator solution containing)

IT Acids, processes  
Alkali metal fluorides  
Alkaline earth fluorides  
**Amines**, processes  
Carboxylic acids, processes  
Tannins  
RL: PEP (Physical, engineering or chemical process); TEM (Technical or

- engineered material use); PROC (Process); USES (Uses)  
 (chemical mech. **polishing slurry** system having  
 activator solution containing)
- IT Semiconductor device fabrication  
**Slurries**  
 (chemical mech. **polishing slurry** system having  
 activator solution for semiconductor device fabrication)
- IT **Polishing**  
 (chemical-mech.; chemical mech. **polishing slurry** system  
 having activator solution for semiconductor device fabrication)
- IT Electric insulators  
 (interlayer; **slurry** system having activator solution for  
 chemical-mech. **polishing** of)
- IT **Surfactants**  
 (**nonionic**; chemical mech. **polishing slurry**  
 system having activator solution containing)
- IT 50-21-5, Lactic acid, processes 56-34-8, Tetraethylammonium chloride  
 60-00-4, Ethylenediaminetetraacetic acid, processes 64-18-6, Formic  
 acid, processes 64-19-7, Acetic acid, processes 67-43-6,  
 Diethylenetriaminepentaacetic acid 75-57-0, Tetramethylammonium chloride  
 75-59-2, Tetramethylammonium hydroxide 77-92-9, Citric acid,  
 processes 79-09-4, Propanoic acid, processes 87-69-4, Tartaric acid,  
 processes 88-99-3, Phthalic acid, processes 95-14-7, 1H-Benzotriazole  
 102-71-6, Triethanolamine, processes 103-76-4, 1-Piperazineethanol  
 103-83-3D, Benzyldimethylamine, alkyl ammonium hydroxide derivs.  
 107-92-6, Butanoic acid, processes 109-52-4, Pentanoic acid, processes  
 111-14-8, Heptanoic acid 111-42-2, Diethanolamine, processes 112-05-0,  
 Nonanoic acid 124-07-2, Octanoic acid, processes 136-85-6,  
 6-Tolyltriazole 139-13-9, Nitrilotriacetic acid 141-43-5,  
 Monoethanolamine, processes 142-62-1, Hexanoic acid, processes  
 149-91-7, Gallic acid, processes 150-39-0, N-  
 Hydroxyethylethylenediaminetriacetic acid 373-68-2, Tetramethylammonium  
 fluoride 409-21-2, Silicon carbide (SiC), processes 526-95-4, Gluconic  
 acid 627-74-7 929-06-6, Diethyleneglycolamine 1306-38-3, Ceria,  
 processes 1310-58-3, Potassium hydroxide, processes 1314-23-4,  
 Zirconium oxide, processes 1332-29-2, Tin oxide 1332-37-2, Iron oxide,  
 processes 1336-21-6, Ammonium hydroxide ((NH<sub>4</sub>)(OH)) 1341-49-7,  
 Ammonium bifluoride 1344-28-1, Alumina, processes 3811-73-2, Sodium  
 pyrrhione 4499-86-9, Tetrapropylammonium hydroxide 5810-42-4,  
 Tetrapropylammonium chloride 6915-15-7, Malic acid 7647-01-0,  
 Hydrochloric acid, processes 7664-38-2, Phosphoric acid, processes  
 7664-39-3, Hydrofluoric acid, processes 7664-93-9, Sulfuric acid,  
 processes 7681-52-9, Sodium hypochlorite 7697-37-2, Nitric acid,  
 processes 7758-19-2, Sodium chlorite 7803-49-8, Hydroxylamine,  
 processes 12033-89-5, Silicon nitride, processes 12125-01-8, Ammonium  
 fluoride 13463-67-7, Titanium dioxide, processes 35914-36-4,  
 Pyrogallol carboxylic acid 57178-78-6 68444-11-1 123155-80-6  
 130397-22-7, Perfluoric acid 152275-68-8, 1-  
 (2,3-Dicarboxypropyl)benzotriazole  
 RL: PEP (Physical, engineering or chemical process); TEM (Technical or  
 engineered material use); PROC (Process); USES (Uses)  
 (chemical mech. **polishing slurry** system having  
 activator solution containing)
- IT 7631-86-9, Silica, processes  
 RL: PEP (Physical, engineering or chemical process); TEM (Technical or  
 engineered material use); PROC (Process); USES (Uses)  
 (colloidal; chemical mech. **polishing slurry** system  
 having activator solution containing)
- IT 7429-90-5, Aluminum, processes 7440-25-7, Tantalum, processes  
 7440-32-6, Titanium, processes 7440-33-7, Tungsten, processes



7440-50-8, Copper, processes

RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)

(slurry system having activator solution for chemical-mech. polishing of)

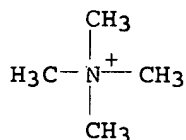
RE.CNT 6 THERE ARE 6 CITED REFERENCES AVAILABLE FOR THIS RECORD  
RE

- (1) Feller; US 5700383 A 1997 HCAPLUS
- (2) Kaufman; US 5783489 A 1998
- (3) Kido; US 5800577 A 1998 HCAPLUS
- (4) Neville; US 5527423 A 1996 HCAPLUS
- (5) Sandusky; US 5266088 A 1998 HCAPLUS
- (6) Yamada; US 5366542 A 1994 HCAPLUS

IT 75-59-2, Tetramethylammonium hydroxide 1336-21-6,  
Ammonium hydroxide ((NH<sub>4</sub>)(OH))  
RL: PEP (Physical, engineering or chemical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)  
(chemical mech. **polishing slurry** system having activator solution containing)

RN 75-59-2 HCAPLUS

CN Methanaminium, N,N,N-trimethyl-, hydroxide (9CI) (CA INDEX NAME)



● OH<sup>-</sup>

RN 1336-21-6 HCAPLUS

CN Ammonium hydroxide ((NH<sub>4</sub>)(OH)) (9CI) (CA INDEX NAME)

H<sub>4</sub>N<sup>+</sup>-OH

L39 ANSWER 29 OF 34 HCAPLUS COPYRIGHT 2005 ACS on STN

AN 2000:803851 HCAPLUS

DN 133:358135

ED Entered STN: 15 Nov 2000

TI Auxiliary agents and **compositions** containing water-soluble polymers for **chemical-mechanical polishing** of semiconductor substrates or devices

IN Ishibashi, Yoichi; Sowa, Toshiki; Fukumoto, Yasuhisa

PA Kao Corp., Japan

SO Jpn. Kokai Tokkyo Koho, 7 pp.

CODEN: JKXXAF

DT Patent

LA Japanese

IC ICM C08L101-14

ICS B24B057-02; C08K003-00; C08L033-02; C08L071-02; C09K003-14;

H01L021-304

CC 76-3 (Electric Phenomena)

## Section cross-reference(s): 38

FAN.CNT 1

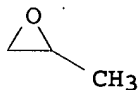
	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 2000313815	A2	20001114	JP 1999-124498	19990430
PRAI	JP 1999-124498		19990430		

CLASS

PATENT NO.	CLASS	PATENT FAMILY CLASSIFICATION CODES
JP 2000313815	ICM	C08L101-14
	ICS	B24B057-02; C08K003-00; C08L033-02; C08L071-02; C09K003-14; H01L021-304

- AB The agents contain water-soluble polymers which show  $\geq 50\%$  adsorption (at 25°) on the **abrasive** particles when 0.05 weight part of the polymers are added to 100 weight parts aqueous **slurry** containing 10 weight% **abrasive** particles having primary particle size 10-100 nm. Preferably, the polymers are polyoxyalkylenes or vinyl copolymers. High accuracy and good surface appearance are achieved by high-speed **polishing** of semiconductor substrates or devices with the **compsns.** containing the polymers above and **abrasives**.
- ST semiconductor **chem mech polishing**  
polyoxyalkylene; water soluble vinyl polymer **abrasive**  
semiconductor
- IT **Abrasives**  
Semiconductor device fabrication  
(**abrasive compsns.** containing water-soluble polymers for **chemical-mech. polishing** of semiconductor substrates or devices)
- IT Polyoxyalkylenes, properties  
RL: PRP (Properties); TEM (Technical or engineered material use); USES (Uses)  
(**abrasive compsns.** containing water-soluble polymers for **chemical-mech. polishing** of semiconductor substrates or devices)
- IT Polyoxyalkylenes, properties  
RL: IMF (Industrial manufacture); PRP (Properties); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)  
(**acrylic; abrasive compsns.** containing water-soluble polymers for **chemical-mech. polishing** of semiconductor substrates or devices)
- IT **Polishing**  
(**chemical-mech.; abrasive compsns.** containing water-soluble polymers for **chemical-mech. polishing** of semiconductor substrates or devices)
- IT 305383-98-6P 305383-99-7P 305384-01-4P 305384-02-5P 305384-04-7P  
305384-06-9P 305384-08-1P 305807-95-8P, **Ethylene oxide-propylene oxide** block copolymer  
monoacrylate-methacrylic acid graft copolymer ammonium salt 312314-72-0P  
312314-75-3P 312746-76-2P 312746-77-3P 312746-82-0P  
RL: IMF (Industrial manufacture); PRP (Properties); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)  
(**abrasive compsns.** containing water-soluble polymers for **chemical-mech. polishing** of semiconductor substrates or devices)
- IT 25322-68-3, Polyethylene glycol 106392-12-5, **Ethylene oxide-propylene oxide** block copolymer  
RL: PRP (Properties); TEM (Technical or engineered material use); USES (Uses)  
(**abrasive compsns.** containing water-soluble polymers for **chemical-mech. polishing** of semiconductor

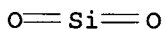
substrates or devices)  
IT 7631-86-9, Silica, uses 11129-18-3, Cerium oxide  
RL: TEM (Technical or engineered material use); USES (Uses)  
(abrasive; abrasive compns. containing  
water-soluble polymers for chemical-mech.  
polishing of semiconductor substrates or devices)  
IT 106392-12-5, Ethylene oxide-propylene  
oxide block copolymer  
RL: PRP (Properties); TEM (Technical or engineered material use); USES  
(Uses)  
(abrasive compns. containing water-soluble polymers for  
chemical-mech. polishing of semiconductor  
substrates or devices)  
RN 106392-12-5 HCAPLUS  
CN Oxirane, methyl-, polymer with oxirane, block (9CI) (CA INDEX NAME)  
  
CM 1  
  
CRN 75-56-9  
CMF C3 H6 O



CM 2  
  
CRN 75-21-8  
CMF C2 H4 O



IT 7631-86-9, Silica, uses  
RL: TEM (Technical or engineered material use); USES (Uses)  
(abrasive; abrasive compns. containing  
water-soluble polymers for chemical-mech.  
polishing of semiconductor substrates or devices)  
RN 7631-86-9 HCAPLUS  
CN Silica (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)



L39 ANSWER 30 OF 34 WPIX COPYRIGHT 2005 THE THOMSON CORP on STN  
AN 2000-587095 [55] WPIX  
DNN N2000-434529 DNC C2000-174953  
TI Chemical mechanical polishing of low  
dielectric constant polymer surface of integrated circuit wafer, utilizes  
slurry comprising fine metal oxide particles uniformly dispersed  
in stable aqueous medium.  
DC A85 L03 U11  
IN HOSALI, S D; SACHAN, V

PA (HOSA-I) HOSALI S D; (SACH-I) SACHAN V; (RODE-N) RODEL HOLDINGS INC  
CYC 24  
PI WO 2000049647 A1 20000824 (200055)\* EN 18 H01L021-302  
RW: AT BE CH CY DE DK ES FI FR GB GR IE IT LU MC NL PT SE  
W: CN JP KR SG  
US 2001013507 A1 20010816 (200149) C23F001-00  
EP 1171906 A1 20020116 (200207) EN H01L021-302  
R: AT BE CH CY DE DK ES FI FR GB GR IE IT LI LU MC NL PT SE  
KR 2001111261 A 20011217 (200238) H01L021-304  
JP 2002537652 W 20021105 (200304) 16 H01L021-304  
ADT WO 2000049647 A1 WO 2000-US3893 20000216; US 2001013507 A1 Provisional US  
1999-120567P 19990218, CIP of US 2000-505042 20000216, US 2000-742853  
20001221; EP 1171906 A1 EP 2000-913478 20000216, WO 2000-US3893 20000216;  
KR 2001111261 A KR 2001-710397 20010816; JP 2002537652 W JP 2000-600297  
20000216, WO 2000-US3893 20000216  
FDT EP 1171906 A1 Based on WO 2000049647; JP 2002537652 W Based on WO  
2000049647  
PRAI US 1999-120567P 19990218; US 2000-505042 20000216;  
US 2000-742853 20001221  
IC ICM C23F001-00; H01L021-302; H01L021-304  
ICS B24B037-00; C09K003-14; H01B013-00  
AB WO 200049647 A UPAB: 20001102  
NOVELTY - A low dielectric constant polymer surface of an integrated  
circuit (IC) wafer is **chemically and mechanically**  
**polished** with a **chemical mechanical**  
**polishing slurry** comprising a colloiddally stable  
dispersion of metal oxide particles. The particles have medium having  
40-430 m<sup>2</sup>/g surface area, less than 1  $\mu$ m aggregate size distribution,  
and less than 0.4  $\mu$ m mean aggregate diameter.  
USE - The method is useful in **chemical mechanical**  
**polishing** a low dielectric constant polymer surface of an  
integrated circuit wafer or semiconductor devices. It is useful in  
chemical mechanical planarization to remove uneven inter-level dielectric  
(ILD) topography, layers of material, surface defects including scratches,  
roughness, or contaminant particles, e.g. dirt or dust.  
ADVANTAGE - The utilization of the **slurry** provides an  
effective **polishing** while minimizing surface imperfections and  
defects.  
Dwg.0/0  
FS CPI EPI  
FA AB  
MC CPI: A09-A03; A11-C04; A12-E07C; L04-B04; L04-C07; L04-C12E  
EPI: U11-C05B9A; U11-C05D1; U11-C06A1A  
L39 ANSWER 31 OF 34 HCAPLUS COPYRIGHT 2005 ACS on STN DUPLICATE 2  
AN 2000:147946 HCAPLUS  
DN 132:230589  
ED Entered STN: 05 Mar 2000  
TI Surfactant based alumina **slurries** for copper **CMP**  
AU Babel, Ashok K.; Mackay, Raymond A.  
CS Center for Advanced Materials Processing, Clarkson University, Potsdam,  
NY, 13699, USA  
SO Materials Research Society Symposium Proceedings (2000),  
566 (Chemical-Mechanical Polishing--Fundamentals and Challenges), 135-142  
CODEN: MRSPDH; ISSN: 0272-9172  
PB Materials Research Society  
DT Journal  
LA English  
CC 76-14 (Electric Phenomena)  
Section cross-reference(s): 56, 57

AB The **polishing** of copper and examination of the **polished** surfaces were carried out with surfactant based alumina **slurries** to yield interesting results. Contrary to our expectation and previously reported research, some of the surfactant based alumina **slurries** resulted in higher copper **polish** rates when compared to the control. Of the **nonionic surfactants**, BrijR 35 was overall the most effective in both acidic and basic media. Ionics were effective at the pH for the appropriate charge type. For the range of surfactants studied, **polish** rates correlated with the HLB of the **nonionic surfactants**. The Hydrophile-Lipophile Balance (HLB) is related to the solubility of the surfactant, with higher number corresponding to increased water dispersibility. The surfactant BrijR 35, with the nonionic **composition** polyoxyethylene(23) lauryl ether, resulted in a dramatic improvement in the average surface uniformity when compared with the control at pH 2, and Sodium Dodecyl Sulfate produced even greater uniformity. Addnl., the effect of BrijR 35 surfactant was maintained with change in **abrasive** size, pad and **polishing** tool. In order to insure that surfactants are compatible with the chemical reagents contained in the com. **slurries**, two chemistries (ferric nitrate and hydrogen peroxide) were employed to test the efficiency of the selected surfactants in their presence. The results showed that the effect of surfactant on stability and removal rate is not influenced by the presence of the chems. Preliminary results indicate that surfactants can have a beneficial effect on both defects and post **polish** clean.

ST aluminum **slurry** surfactant **abrasive** copper **CMP**  
IT **Slurries**

(alumina; surfactant based alumina **slurries** for copper **CMP**)

IT Surfactants  
(in **abrasive slurry**; surfactant based alumina **slurries** for copper **CMP**)

IT **Surfactants**  
(**nonionic**; surfactant based alumina **slurries** for copper **CMP**)

IT **Abrasives**  
(**slurry**; surfactant based alumina **slurries** for copper **CMP**)

IT Hydrophile-lipophile balance value  
(surfactant based alumina **slurries** for copper **CMP**)

IT 1344-28-1, Alumina, properties  
RL: NUU (Other use, unclassified); PRP (Properties); TEM (Technical or engineered material use); USES (Uses)  
(**slurry**; surfactant based alumina **slurries** for copper **CMP**)

IT 7440-50-8, Copper, properties 7722-84-1, Hydrogen peroxide, properties  
10421-48-4, Ferric nitrate  
RL: PEP (Physical, engineering or chemical process); PRP (Properties); PROC (Process)  
(surfactant based alumina **slurries** for copper **CMP**)

RE.CNT 8 THERE ARE 8 CITED REFERENCES AVAILABLE FOR THIS RECORD  
RE

- (1) Adler, J; Mat Res Soc Symp Proc 1998, V501, P387 HCAPLUS
- (2) Anon; Private Communication from BJ Palla, D O Shah, M Biemann, and RK Singh
- (3) Anon; Private Communication from G Sabde
- (4) Babel, A; submitted for publication
- (5) Biemann, M; Electrochemical and Solid-state Letters 1999, V2(3), P148 HCAPLUS
- (6) Braun, A; Semiconductor International 1998, V21, P65

- (7) Campbell, D; CAMP Newsletter 1994, V10, P1  
 (8) Free, M; Micro 1998, May, P29

L39 ANSWER 32 OF 34 HCAPLUS COPYRIGHT 2005 ACS on STN  
 AN 1998:242076 HCAPLUS  
 DN 128:285577  
 ED Entered STN: 29 Apr 1998  
 TI Cerium oxide **abrasive** and **polishing** of substrates  
 IN Yoshida, Masato; Matsuzawa, Kiyoshi  
 PA Hitachi Chemical Co., Ltd., Japan  
 SO Jpn. Kokai Tokkyo Koho, 4 pp.  
 CODEN: JKXXAF  
 DT Patent  
 LA Japanese  
 IC ICM C09K003-14  
 ICS C01F017-00; C08K003-22; C08L101-00; C09C001-68; H01L021-304  
 CC 57-7 (Ceramics)  
 Section cross-reference(s): 76

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 10102040	A2	19980421	JP 1996-258769	19960930
PRAI	JP 1996-258769		19960930		

CLASS

PATENT NO.	CLASS	PATENT FAMILY CLASSIFICATION CODES
JP 10102040	ICM	C09K003-14
	ICS	C01F017-00; C08K003-22; C08L101-00; C09C001-68; H01L021-304

AB Ce oxide particles containing  $\geq 90\%$  primary particles showing contours containing angular parts smaller than  $120^\circ$  in observation by transmission type electron microscope are dispersed in water, and the Ce oxide particle **slurry** is used as **abrasive** for **polishing** of substrates optionally having SiO<sub>2</sub> insulating layer. Optionally, the **slurry** contains a dispersant selected from water-soluble organic polymer, water-soluble anionic **surfactant**, water-soluble **nonionic surfactant**, and water-soluble amine.

ST cerium oxide **abrasive** silicon substrate **polishing**

IT Surfactants

(anionic, dispersant; **polishing** of silicon substrate by **slurry**-form cerium oxide **abrasive** containing)

IT Amines, uses

RL: TEM (Technical or engineered material use); USES (Uses)  
 (dispersant; **polishing** of silicon substrate by **slurry**-form cerium oxide **abrasive** containing)

IT Surfactants

(**nonionic**, dispersant; **polishing** of silicon substrate by **slurry**-form cerium oxide **abrasive** containing)

IT Polishing

(of silicon substrate; **slurry**-form cerium oxide **abrasive** for)

IT Abrasives

(**slurry**-form cerium oxide **abrasive** for **polishing** silicon substrate)

IT 9003-03-6, Ammonium polyacrylate

RL: TEM (Technical or engineered material use); USES (Uses)  
 (dispersant; **polishing** of silicon substrate by **slurry**-form cerium oxide **abrasive** containing)

IT 7631-86-9, Silica, uses

RL: TEM (Technical or engineered material use); USES (Uses)  
 (polishing of silicon substrate coated with; slurry  
 -form cerium oxide abrasive for)

IT 7440-21-3, Silicon, processes  
 RL: PEP (Physical, engineering or chemical process); PROC (Process)  
 (polishing of substrates of; slurry-form cerium  
 oxide abrasive for)

IT 1306-38-3, Cerium oxide, uses  
 RL: TEM (Technical or engineered material use); USES (Uses)  
 (slurry-form cerium oxide abrasive for  
 polishing silicon substrate)

L39 ANSWER 33 OF 34 HCAPLUS COPYRIGHT 2005 ACS on STN  
 AN 1997:248770 HCAPLUS  
 DN 126:350637  
 ED Entered STN: 17 Apr 1997  
 TI A study of post-chemical-mechanical-polish cleaning strategies  
 AU Huynh, C.; Rutten, M.; Cheek, R.; Linde, H.  
 CS Microelectronics Div., IBM, Essex Junction, VT, 05452, USA  
 SO Proceedings - Electrochemical Society (1997), 96-22 (Chemical Mechanical  
 Planarization), 16-26  
 CODEN: PESODO; ISSN: 0161-6374  
 PB Electrochemical Society  
 DT Journal  
 LA English  
 CC 77-3 (Magnetic Phenomena)  
 Section cross-reference(s): 66

AB Chemical Mech. **Polishing (CMP)** has emerged as the premier  
 technique for achieving both local and global planarization. One of the  
 primary concerns in the use of **CMP**, however, is the efficient  
 and complete removal of **CMP** contaminants such as **slurry**  
 and residual hydrocarbons. This paper discusses the removal of  
 silica-based **slurries** utilized for polysilicon and oxide  
**CMP** processes. The effects of mech. brush cleaning, chemical  
 treatments, and **polish** processes on defect d. for a 16Mb memory  
 technol. are presented. In addition, the chemical compatibility of  
**polishing slurries** with various brush and  
**polishing pad** materials is discussed.

ST silicon wafer chem mech **polishing** cleaning  
 IT Memory devices  
 (RAM (random access); post-chemical-mech.-**polish** cleaning  
 strategies for silicon wafers)

IT **Polishing**  
 (chemical-mech.; post-chemical-mech.-**polish** cleaning strategies for  
 silicon wafers)

IT **Surfactants**  
 (nonionic; post-chemical-mech.-**polish** cleaning  
 strategies for silicon wafers)

IT Cleaning  
 Semiconductor devices  
 (post-chemical-mech.-**polish** cleaning strategies for silicon  
 wafers)

IT **Abrasives**  
 (slurry removal; post-chemical-mech.-**polish** cleaning  
 strategies for silicon wafers)

IT 7440-21-3, Silicon, processes  
 RL: DEV (Device component use); PEP (Physical, engineering or chemical  
 process); PROC (Process); USES (Uses)  
 (post-chemical-mech.-**polish** cleaning strategies for silicon  
 wafers)

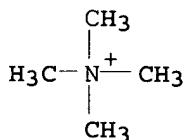
IT 75-59-2, TMAH  
 RL: PEP (Physical, engineering or chemical process); PROC (Process)  
 (post-chemical-mech.-polish cleaning strategies for silicon  
 wafers)

IT 7631-86-9, Silica, processes  
 RL: DEV (Device component use); PEP (Physical, engineering or chemical  
 process); PROC (Process); USES (Uses)  
 (slurry removal; post-chemical-mech.-polish cleaning  
 strategies for silicon wafers)

RE.CNT 13 THERE ARE 13 CITED REFERENCES AVAILABLE FOR THIS RECORD  
 RE  
 (1) Ali; Microcontamination 1994  
 (2) Ali, I; Semiconductor Intl 1990, P92 HCAPLUS  
 (3) Blackwell, R; US 5320706  
 (4) Bowling, R; J Electrochem Soc 1995, V137, P2208  
 (5) Cook, L; J Non-Crystalline Solids 1990, V120, P152 HCAPLUS  
 (6) Huynh; "CMP Clean Process Engineering, CMP Clean Evaluation," Presented at  
 Sematech Surface Prep PTAB Meeting 1993  
 (7) Huynh, C; 1993 Research/TP Symposium on Silicon Technology 1993  
 (8) Huynh, C; U S Patent Pending  
 (9) Iler, R; The chemistry of Silica 1979, P366  
 (10) Jeon, J; Belgium Semiconductor Symposium 1995  
 (11) Park, J; Microcontamination Conference 1992  
 (12) Roy; J Electrochem Soc 1995, V142, P216 HCAPLUS  
 (13) Singer, P; Wafer Processing News, Semiconductor Intl 1995

IT 75-59-2, TMAH  
 RL: PEP (Physical, engineering or chemical process); PROC (Process)  
 (post-chemical-mech.-polish cleaning strategies for silicon  
 wafers)

RN 75-59-2 HCAPLUS  
 CN Methanaminium, N,N,N-trimethyl-, hydroxide (9CI) (CA INDEX NAME)



● OH<sup>-</sup>

L39 ANSWER 34 OF 34 HCAPLUS COPYRIGHT 2005 ACS on STN  
 AN 1995:582574 HCAPLUS  
 DN 122:320762  
 ED Entered STN: 02 Jun 1995  
 TI Synthetic diamond-based polishing suspension for semiconductors  
 IN Komarov, Vitaly Fedorovich; Sakovich, Gennady Viktorovich; Petrov, Evgeny  
 Anatolievich; Klimov, Anatoly Valentinovich; Kostjukov, Sergei Ivanovich;  
 Baraboshkin, Konstantin Sergeev  
 PA Nauchno-Proizvodstvennoe Obiedinenie "Altai", Russia  
 SO PCT Int. Appl., 18 pp.  
 CODEN: PIXXD2  
 DT Patent  
 LA Russian  
 IC G09G001-02; C09G001-08



CC 57-6 (Ceramics)

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 9422970	A1	19941013	WO 1994-RU68	19940401
	W: BY, CA, JP, UA, US				
	RW: AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE				
	RU 2034889	C1	19950510	RU 1993-12940	19930402
PRAI	RU 1993-12940	A	19930402		

CLASS

PATENT NO.	CLASS	PATENT FAMILY CLASSIFICATION CODES
WO 9422970	IC	G09G001-02IC C09G001-08
WO 9422970	ECLA	C09K003/14B

AB The invention concerns a **polishing** compound for giving a superfinish to surfaces, containing 5-10% of an abrasive component suspended and a liquid medium. The abrasive component is a synthetic diamond-containing material with specified properties in which the primary particles are 4-6 nm in size and combine to form aggregates of 20-500 nm in size, with sp. surface areas of 250-450 m<sup>2</sup>/g and pore volume of 0.6-1.0 cm<sup>3</sup>/g. A typical **composition** contained the above abrasive material 5-10, glycerol or diethylene glycol 10-15, H<sub>2</sub>O<sub>2</sub> 5-15, ethylenediamine 0.1-1.0, and KOH or NaOH 1-3% in H<sub>2</sub>O.

ST diamond synthetic **polishing** suspension; glycerol synthetic diamond **polishing** suspension; hydrogen peroxide diamond **polishing** suspension; hydroxide synthetic diamond **polishing** suspension

IT **Polishing** materials  
(synthetic diamond-based **polishing** suspension for semiconductors)

IT Petrolatum  
Waxes and Waxy substances  
RL: MOA (Modifier or additive use); TEM (Technical or engineered material use); USES (Uses)  
(synthetic diamond-based **polishing** suspension for semiconductors)

IT **Polishing**  
(chemical-mech., synthetic diamond-based **polishing** suspension for semiconductors)

IT Alcohols, uses  
RL: MOA (Modifier or additive use); TEM (Technical or engineered material use); USES (Uses)  
(long-chain, ethoxylated, synthetic diamond-based **polishing** suspension for semiconductors)

IT 148-24-3, 8-Hydroxyquinoline, uses  
RL: MOA (Modifier or additive use); TEM (Technical or engineered material use); USES (Uses)  
(saturated aqueous solution; synthetic diamond-based **polishing** suspension for semiconductors)

IT 56-81-5, Glycerol, uses 107-15-3, Ethylenediamine, uses 111-46-6, Diethylene glycol, uses 112-80-1, Oleic acid, uses 1310-58-3, Potassium hydroxide, uses 1310-73-2, Sodium hydroxide, uses 7631-86-9, Aerosil, uses 7722-84-1, Hydrogen peroxide, uses 9003-11-6, **Ethylene oxide-Propylene oxide** copolymer 11099-07-3, Stearin 12751-48-3, Syntanol 25322-68-3D, Polyethylene glycol, ethers, with fatty alc. 31566-31-1, Glycerol monostearate  
RL: MOA (Modifier or additive use); TEM (Technical or engineered material use); USES (Uses)  
(synthetic diamond-based **polishing** suspension for

semiconductors)  
IT 7782-40-3, Diamond, uses  
RL: TEM (Technical or engineered material use); USES (Uses)  
(synthetic; synthetic diamond-based **polishing** suspension for  
semiconductors)  
IT 7631-86-9, Aerosil, uses  
RL: MOA (Modifier or additive use); TEM (Technical or engineered material  
use); USES (Uses)  
(synthetic diamond-based **polishing** suspension for  
semiconductors)  
RN 7631-86-9 HCAPLUS  
CN Silica (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)

O=Si=O

=> SAVE L39 GOU807/A  
ANSWER-SET L39 HAS BEEN SAVED AS 'GOU807/A'

=>